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ABSTRACT

Intended as a review of the origins and present status of television courses as a form of higher education for adults, this sourcebook addresses the following questions: What is a telecourse? What are the legal and philosophical bases that support the telecourse concept? Where do telecourses fit in the college or university structure? Who produces and offers telecourses in the college setting? And how well do students learn from these courses? First, a global perspective is provided on the growth of education via broadcasting, the renewed acceptance of educational television, and the potential of telecommunications for meeting third world educational needs. Following an argument for the integration of telecourses into the fabric of higher education, a summary is provided of the sourcebook's perspectives and conclusions. Subsequent chapters cover: (1) the telecourse model; (2) the position of the Board of Governors of the California Community Colleges regarding academic credit for telecourses; (3) the theoretical bases of telecourses; (4) the range of students best served by telecourses; (5) the California Postsecondary Education Commission's 1981 report on telecourses; (6) instructional design; (7) the faculty's role in designing, developing, and offering telecourses; (8) research evaluating learning outcomes; (9) the academic soundness of telecourses; (10) the role of the telecourse instructor; and (11) the scope and influence of telecourses. A glossary is appended. (LL)

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A TELECOURSE SOURCEBOOK FOR THE 80s

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A TELECOURSE SOURCEBOOK

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FOREWORD

By Norman E. Watson
Chancellor, The Coast Community Colleges

"Education, like every other important entity of society, must be responsive to the world it serves or suffer from constant danger of becoming static and lifeless. Its responses must be active, innovative, contemporary. And those who design education must do more than merely respond; they must develop initiatives of their own that reflect an awareness of changing necessities" (Gould, 1973, p. 1).

"Educational institutions and means must be multiplied, made more accessible, offer the individual a far more diversified choice" (Faure, 1972).

COMMUNITY COLLEGE MOVING TOWARD INCLUSIVENESS

In many ways the community college of the 1980s and 1990s is located at a point on a continuum between exclusiveness and inclusiveness, between elitism and egalitarianism. The coming of the land-grant college in the mid-1880s was a shock to the traditional New England colleges, which had been imported from England. The community college of the early and mid-1900s, with open-door admissions policies and its emphasis on assisting all who could profit from further instruction, was another great stride in the development of greater inclusiveness. What Dr. Patricia Cross has described as "campus-expansiveness" was another large step in the same direction. She states, "The college campus has burst explosively from its

boundaries and decentralization of learning is the major trend of our time." She goes on to point to the "possibility of exploding the great reach of telecommunications to extend access to education beyond the classroom and the campus" (First Annual National Conference on Open Learning, 1974, p. 39).

REACHING NEW STUDENTS IN MORE EFFECTIVE WAYS

As the variety and diversity of our students increase in age, in preparation for learning, in interests, in abilities, in previous experience, so must the variety and diversity of learning delivery systems increase. S. N. Postlethwait has said that we must include a great variety of teaching techniques and take advantage of all the modern communications media. He strongly advocates the use of alternative systems of education (Postlethwait, Novak, Murray, 1964).

Assessment of prior learning experiences, cooperative education, learning laboratories, independent study, computer-assisted instruction, telecommunications, the videotape, the videodisc, teletex, all become possible tools to allow educators to reach new students in more effective ways.

The community colleges of this country have not been alone in attempting to reach new students in new ways. Japan, Germany, France, the Peoples Republic of China, Great Britain, the Soviet Union, Australia, New Zealand, Iran, India, Venezuela, Columbia, Thailand, Sri Lanka, Norway, and Canada, all have made progress in moving toward "learning at a distance."

ACCESSIBILITY OF EDUCATION VIA BROADCASTING

The rapid growth of broadcasting and television during the 1950s and 1960s, opened new opportunities for education in providing greater access to

potential students. One of the first institutions to seize the new medium and to utilize it for educational purposes was the TV College of the Chicago City Colleges. Starting its pioneering efforts in 1951, the Chicago City TV College has now served more than 200,000 students. The New York University of the Air was another early leader in the use of television to deliver higher education.

It is interesting to note the parallel paths taken in the move toward universal education in the United States and in the expansion of broadcasting. In 1947, the Truman Commission articulated a strong position on universal education; this action was followed a few years later by the even stronger pronouncements of the Eisenhower Commission. And in 1952, when the FCC assigned additional frequencies to establish public broadcasting, one of the original objectives of the new system was the provision for instructional television and education.

Probably no institution has had such a dramatic impact on the use of television in higher eduction as has the Open University of Great Britain. Sir Walter Perry writes that the concept of the Open University evolved from the convergence of three major educational trends: the development for the provision of adult education, the growth of educational broadcasting, and the objective of the spread of egalitarianism in education (Perry, 1977, p. 1).

Starting the operation in 1971, in a country with a highly stratified class structure and a long history of elitist higher education, the Open University now enrolls 64,000 students. It did much to rekindle interest in the United States in the use of television in education.

RENEWED ACCEPTANCE OF EDUCATIONAL TELEVISION

Following an early and fairly enthusiastic acceptance of educational television in the early 1950s, a period of disenchantment followed in the 1960s as it came to be apparent that television could not solve all of

education's problems. Now, during the 1970s and 1980s, there is a renewed acceptance based on a greater understanding of the potential of the medium, its strengths and limitations, and an increasing sophistication in the development of a system of learning elements which are integrated and mutually reinforce the learning experience.

The Carnegie Commission, in its 1979 landmark report on the future of public broadcasting, stated, "Television and radio have great unused potential for learning, and new technologies are on the verge of greatly enhancing this potential." The commission also stated, "We believe it is time to launch new efforts to tap the power of broadcasting and the new telecommunications media for learning" (Carnegie Commission, 1979, pp. 255-256).

The commission concluded that, "It is clear that with careful planning, skillful execution, and thorough evaluation, telecommunication will play an increasingly fundamental role in the learning processes of Americans of all ages" (p. 273).

ESTABLISHMENT OF CPB/ASC PROJECT

The need for the development of additional high-quality college courses to be offered through the use of telecommunications was clearly recognized with the establishment of the CPB/ASC PROJECT, whereby $150 million will be spent during the next fifteen years to create new, alternative, high-quality, college-level educational material and to demonstrate the use of communications systems for addressing unique higher education problems. The specific mission of the project is to provide institutions of higher education with a significant new resource of educational programming and to explore and discover new ways to advance higher education through telecommunications.

GROWTH OF TELEVISION IN HIGHER EDUCATION

The use of television in higher education today is widespread and growing. The Public Broadcasting Service has identified adult learning as one of its primary objectives. Colleges and universities on the one hand and public broadcasting stations on the other are learning to work together to make additional educational opportunities available to individuals who would not have an opportunity for further education without the intervention of telecommunications. As cable becomes much more available, and as the new technology offers additional avenues, more and more opportunities will become possible for the potential student.

TELECOMMUNICATIONS MEET THIRD WORLD EDUCATIONAL NEEDS

Telecommunications, as a matter of fact, may well offer not only the best but perhaps the only opportunity to meet the educational needs of Third World countries and the remote and unreached populations they serve. The UNESCO report, Broadcasting for Adult Education, which is admittedly idealistic, states:

> Education has to be beamed at different target audiences: illiterates and school drop-outs; those who have not yet found their place in the productive life of the society, and those who are looking for improvement of already obtained qualifications; people wanting to complete primary, secondary, or higher education, and those who wish to supplement their university degrees with new knowledge; those who live in underdeveloped areas which have to catch up on decades of economic development, and those of the affluent societies looking for fulfilling use of their leisure. Adult education has to be made available to people of urban and rural areas, to people living dispersed over vast territories, to men and women of different ages, races, traditions, beliefs, cultural backgrounds, walks of life, to people speaking

different languages, inciuding those which do not have a written form (Waniewicz, 1972, p. 12).

The need for new approaches to adult education, for its extension, diversification and intensification is experienced by all countries whatever the degree of their economic development. Nowhere are the existing traditional channels and structures of adult education able to fulfil the needs. The existing establishment, even if it is efficient educationally, which it often is not, is too small in scale, too short in reach, and too limited in scope.

There are not enough teachers, social workers, health workers, extension agents; very often they are not well qualified; scarcity of funds and facilities, increases in the per capita costs of instruction--these and many other deficiencies, pose problems difficult to solve solely through conventional educational means p. 13).

ONE SMALL STEP REACHED

The use of telecommunications by the community colleges has moved educational institutions a long way along the road from exclusiveness to inclusiveness. In terms of reaching the much more inclusive goals described by UNESCO, however, we have made just one small step.

REFERENCES

Carnegie Commission. Public Trust, The Report of the Carnegie Commission on Public Broadcasting. New York: Bantam Books, 1979.

Faure, Edgar. Learning to Be. Paris: UNESCO International Commission on the Development of Education, 1972.

First Annual National Conference on Open Learning. Conference Proceedings. Lincoln, Nebr.: n.p., 1974.

Gould, Samuel B. Diversity by Design. San Francisco: Jossey-Bass, 1973.

Perry, Walter. The Open University. San Francisco: Jossey-Bass, 1977.

Postelthwait, S.N.; Novak, J.; and Murray, H. An Integrated Experience Approach to Learning. Minneapolis, Minn.: Burgess Publishing, 1964.

Waniewicz, Ignacy. Broadcasting for Adult Education. Paris: UNESCO, 1972.

INTRODUCTION

by Bernard J. Luskin
President, Coastline Community College

When developments occur with intense rapidity--faster than they can be absorbed into an organizational structure--there is sometimes a propensity to deny the reality of their impact on the organization. Such was the case with computers for those of us who weathered their birth, and such will be the current reality with the emergence of a dramatically more advanced communications technology.

Early inventions included printing, electricity, powered flight, and the telegraph. When these breakthroughs first occurred more than one hundred years ago, their benefits were important, but they initially affected the few rather than the many; they were advances for the meritocracy.

IMPACT OF TECHNOLOGY ON THE FUTURE

Many innovations are emerging from these inventions, and their benefits are designed to be egalitarian; that is, for the many. These relatively recent innovations include broadcast television, satellite, cable, instructional television fixed service (ITFS), and point-to-point microwave, videodisc and videocassette, data-computer networks, and the various subgroups encompassed by each of these technologies. These new advances make the case for diversity and ease of access and are egalitarian in nature: they are designed to proliferate new means of communications. With increasing speed, industry is coupling these new devices in a variety of ways and they are becoming smaller, faster, easier to use, and cheaper. Users can understand them and society at large is integrating them. As their use permeates education, they provide many opportunities for us to do even better what we already do well in education, and they offer new dimensions to teaching and learning.

The effectiveness of television has already been well demonstrated in hundreds of experiments. It is no longer necessary to prove the proven. The recent Carnegie Commission study on the future of public broadcasting articulated that position.

Certainly, we must continue to study and improve, but we cannot deny the existence of the increasing sophistication and use of advancing communications systems in our society and in our schools.

Our reality is that some people grasp the potential of these new developments and some do not. Yet our future holds a great deal of diversity. Classroom- and nonclassroom-based learning systems will coexist side by side as new, accessible, and flexible educational forms emerge.

WHO WILL MAKE THE MOST OF REALITY?

In fact, broadcast courses, which enable formal learning to take place in the home, give education a new potential for becoming a family affair. Broadcast courses offer convenient access to quality learning opportunities which have heretofore not been widely available. However, institutional inertia and the current turbulent fiscal environment continue to create forces which stall wider-scale use of these advances in technology. Nonetheless, their use is increasing.

Whether broadcast courses will become a viable reality is no longer an issue. Telecourses are here, they are successful, and they are desired by a large cohort of people.

If higher education does not integrate these systems into its fabric, the private sector will. The issue, therefore, is not whether advancing technology and its possibilities will become reality; the issue is who will seize and make the most of this reality. The technology and the times have now come together in ways which create new, rich, and resourceful ways for people to have broader-based access to learning. Television courses are simply one dimension of this new diversity.

AN ABSTRACT

A Telecourse Sourcebook for the 80s

This sourcebook was created to review the origins and present status of television courses as a form of higher education for adults. In accomplishing this goal, the book also demonstrates the extensiveness and diversity of the literature on telecourses. This literature signifies that telecourses are not merely one of the many technological "innovations" which periodically sweep the education world; rather they are a serious, effective, and enduring alternative form of education which has served hundreds of thousands of students and are being offered by hundreds of educational institutions. The sourcebook also demonstrates the leadership role taken by Coastline Community College and The Coast Community Colleges in designing and producing telecourses of superior academic quality and appeal and in offering and distributing these courses, as well.

There are many ways to look at telecourses. First, the sourcebook addresses in depth some basic questions: What is a telecourse? What are the legal and philosophical bases that support the telecourse concept? Where do telecourses fit in the college or university structure? Who produces and offers telecourses in the college setting? How well do students learn from these courses?

To understand telecourses, one also has to know something about how they are designed and produced, the roles of television and other media in the telecourse system, what kind of students tend to like telecourses and do well in them, the role of faculty members in the production and offering of telecourses, and how that role differs from their work in on-campus courses, the kinds of "support" which have been found to be necessary if "distant"

learners taking telecourses are to succeed. Each of these perspectives is described in this sourcebook, and some important conclusions are drawn.

- Telecourses are multi-media packages of educational materials designed for "distant" learners--off-campus students taking the courses. Today's well-designed telecourses combine not only video but also print components with student activities, interaction with faculty members, and test materials to achieve the course goals. An appropriate array of these human and technological resources is chosen for each telecourse and, through the process of instructional design, is integrated into a learning system that can, for many students be more effective than a classroom experience.

- The Education Code for the state of California recognizes telecourses and other forms of distance learning as legitimate forms of instruction. Telecourses first were recognized as coordinated instruction systems (1976), then as forms of independent study (1979) by SB941 and Section 845(a)2) of the Education code in 1979. Credit for telecourses is based on the formula: one student contact hour for each unit of telecourse study. The criterion for evaluation of telecourses presented in the Code is identification and measurement of the outcome of instruction. Students do not get credit simply by watching a series of television programs.

- Telecourses rest on two theoretical premises: first that people can learn--and learn alone quite effectively--from a variety of "sources," including books, lectures, newspaper, experience, discussions, and television; second, that one of the goals of higher education is to foster qualities of independence and autonomy in students. Successful completion of a

telecourse requires a high degree of independence, self-motivation, and maturity on the part of students.

- First used in the early 1950s by higher education institutions, telecourses are now common throughout the country and in many other parts of the world. Broadcast by public, cable, and commercial television stations, and offered for credit by 700 to 800 two- and four-year colleges and universities, telecourses were taken by approximately 550,000 students in the 1981-82 school year. Telecourses delivered by open broadcast often must compete with network offerings. One telecourse coproduced by the Coast Community Colleges is known to have attracted 750,000 viewers during a PBS broadcast of the series in 1981-82.

- Many educational institutions and consortia have organized to offer telecourses to large numbers of students. Since 1970 when telecourses were first offered by the Coast Community College District (now known also as The Coast Community Colleges), about 62,000 students have enrolled in telecourses offered by the district. Coastline Community College presently enrolls approximately 5,000 students each semester in at least twenty telecourses which are broadcast via a combination of cable, commercial, and public television facilities. The Chicago TV College has offered telecourses to more than 200,000 students. Dallas and Miami-Dade Community College Districts and the Southern California Consortium for Community College Television have large enrollments. These groups, including Coast, are also major telecourse producers.

- Coast's telecourses are widely accepted throughout the United States and Canada, having been adopted into the cirricula of 930 colleges and universities

through regular curriculum committee processes. "The Growing Years," a course in child development co-developed by The Coast Community Colleges and produced in the studios of KOCE-TV, Channel 50, has been used at lower-division, upper-division, and graduate levels by more than 500 colleges and universities in the United States. Such use of Coast's telecourses is a testimonial to their academic soundness, since each college adopts courses only after they have been thoroughly reviewed and evaluated by its own faculty in the curriculum committee process.

- Most telecourses are produced following basic principles of instructional design, including: 1) identification of the intended audience for the telecourse; 2) a design and production organization consisting of a team of experts; and 3) course goals and specific instructional objectives stated in terms of demonstrable student behavior and activities. In the process, telecourses are designed to compare with national standards for similar campus courses on such measurable dimensions as scope and content, learning objectives, assignments, and instruments for evaluation.

- Faculty members are involved in all aspects of telecourses: the design and production stages, the process of selection of courses for individual college and university offering telecourses, and teaching the courses and evaluating student performance.

- A thorough review of research of the last thirty years on instructional television reveals that

telecourse students learn as well as their classroom counterparts and that they consistently achieve pre-specified learning objectives and course goals. Some recent studies comparing performance of students enrolled in telecourses to that of students taking the same course on campus show that telecourse students perform better and derive benefits not available to campus students.

- Many, but by no means all, telecourse students are "outside the mainstream" in education. Most are ordinary individuals. They do, however, tend to be older than on-campus students, are attracted by the convenience of taking telecourses, and also like the independence and visual stimulation of courses. Telecourses have helped to make it possible for many American military personnel to obtain college degrees. They also help to overcome disabilities of students such as physical handicaps, incarceration in prison, and lack of time and travel facilities necessary for on-campus study.

- How the telecourse is delivered and implemented by the college is increasingly recognized as vital to student success. Offering telecourses requires the institution to provide different kinds of education services than those provided for on-campus learners. Faculty telephone "office" hours for students, registration by mail, multiple times and locations of exams, frequent correspondence with distant learners, and prompt feedback to students concerning results of tests and assignments are a few of the services which have proven useful to telecourse students. It is being noted with increasing frequency that faculty play the key role here in how they adopt the course elements to the needs of students for whom they are responsible.

THE TELECOURSE MODEL (A DEFINITION)

If one has neither been a telecourse student nor had the opportunity to view a telecourse, as many college faculty and administrators have not, it might be difficult to visualize the concept of the telecourse as it is now being applied to serve the learning needs of millions of students across the world. There is no current, accurate dictionary definition, and the literature has, until the last several years, been stocked with conflicting, obsolete, and frequently meaningless definitions of instructional television.

Gripp (1977) was among the first to define the telecourse and distinguish the concept from other forms of instructional television.

> ...a system specifically designed to involve a variety of learning strategies to forge a complete education unit available to the student in the convenience of his own home. (It) is not a correspondence course with pictures; nor is it a televised lecture with supplementary readings. It is an examination and presentation of a body of knowledge and information through the use of sight, sound, color, movement, and print in a manner designed to stimulate, motivate, clarify, and quantify. A telecourse is designed to take maximum advantage of the strengths of each component to lead the student through a "success-oriented" experience (p. 18).

A COORDINATED LEARNING SYSTEM OF MANY PARTS

A specific and concise definition of the telecourse by its parts is suggested by Zigerell: "...the term 'telecourse' describe(s) what is essentially a learning system for the student which is comprised of video programs, textbooks and study guides, learning exercises, and a variety of other study aids that may include telephone, mail, and face-to-face contacts with tutors or instructors" (1980, p. 2). In the telecourse, the varied components are coordinated to achieve carefully defined learning objectives (p. 3). Other writers note

that such a course usually also includes instruments for testing learning objectives and often will also require class meetings, field trips, term papers, book reports, and special projects. During the process of instructional design, these resources--both technological and human--are creatively molded into a learning system that is stronger and more effective for many students than either the classroom experience or any one or two media used singly. (Note the discussion on designing telecourses included elsewhere in this sourcebook.)

EVOLUTION OF THE CONCEPT

Early definitions, some of which still persist, tended to class instructional television as an electronic "blackboard" or just another audiovisual handmaiden to the teacher of elementary and secondary students. At the college level, instructional television usually implied televised lectures. Unfortunately, the earliest uses of television for formal instruction did fit these descriptions; educators regarded the television screen as an extension of the classroom, not as a medium that has enormous advantages and capacities of its own. The true capacities and strengths of the medium were not being recognized for a long time. Thus, early efforts to teach by television were largely disappointing. Yet the telecourse concept evolved from these "blackboard" and "talking-head" approaches, as well as from the older independent study models long familiar to higher education, and recognition of television's unique potential came with evolution. Crow (1977) was early to recognize and criticize the failure of educators to use the television medium to its best advantage:

> ...simply taking photographs of what is traditionally done in a regular classroom and then showing those pictures on television is not using television for the unique medium that it is. Neither, of course, is taking pictures of a talking face...television can involve carefully designed, written, and produced presentations that allow for a high level of precision and quality that could never be replicated in a regular classroom presentation (p. 8).

The television program does not stand alone in the telecourse system. While it is the most visible part of the system, it is not necessarily the most dominant (Flanagan, 1980). The place of television in the learning system has also been described by Watson (1980), Beaty (1982), Cavert (1982), DuBois (1982), and Members of the Non-Traditional Instruction Committee of the Los Angeles Community College District (1982).

The Non-Traditional Instruction Committee points out that "Our telecourses are not purely television courses, in that one-third of the process depends on other than the video segments" (p. 2). Telecourse students in this district complete extensive written assignments and attend eighteen hours of on-campus sessions.

Cavert agrees: "The television program is one component among an array in the system." The student does not "sit down and watch television for thirty minutes thirty times and get credit for it" ("Learning by Viewing"). DuBois notes that taking a telecourse is "much more than just watching a television program" ("Learning by Viewing"). Beaty says "It is important for the student (and faculty) to realize that a telecourse is not just so many segments you can watch like a football game. There is a text, study guide assignments, tests, campus sessions, and interaction with an instructor" ("Learning by Viewing").

Flanagan explains that the instructional load is shared and "shares" differ with the course:

> Not all of the instruction in the course is contained within the television series. At least three and possibly four different components contribute to the knowledge a student gains. The instructional load for a telecourse is divided among the video series, a textbook, the study guide and possibly class meetings; and the "division of labor" is not necessarily consistent from course to course (p. 64).

In Coast's systems approach to the design and development of telecourses, text materials help to establish the orientation of the telecourse and shape its goals and content. Books also furnish for the student a permanent resource that has the capacity to provide far more information than it is possible to present within the time limits of television broadcasts. But text materials are firmly supported by a series of television programs which are painstakingly designed to clarify, illustrate, visualize, reinforce, and extend concepts presented in the course materials. To these ends, the telecourse applies both the enormous capacities of the camera itself and the considerable skills and arts of the professionals behind the camera.

The telecourse concept demands that television programs will be "carefully designed...and produced presentations" that meet high levels of "precision and quality" (Gripp, p. 18). Television programs take students of telecourses around the world, forward to the future, and backwards to the past. Students of telecourses produced by The Coast Community Colleges "journey" quickly and freely with the television camera to experimental laboratories, where they "meet" and "talk" with world-renowned psychologists; to the Sistine Chapel in Rome for breathtaking glimpses of Michelangelo's beautiful frescoes (in a humanities course); to Arizona's Lowell Observatory to study the stars (astronomy); to a hospital surgery to watch surgeons repair a defective heart (biology). Many another technological technique--sound, color, movement, the close-up--is artfully used to color the learning experience with meaning and excitement.

THE SUM IS GREATER THAN ITS PARTS

Dr. Norman E. Watson, chancellor of The Coast Community Colleges, has emphasized, "Neither television nor books can stand alone as an educational system today. But combine an excellent text and a well-designed television series, tie them together with a study guide that bridges content and leads the student to achieve his objectives by way of these and other learning devices, and you have a system that is greater than any one of its elements taken alone. The sum is greater than any of its parts" (1980).

The telecourse model is a complex, exciting, and demanding concept that differs somewhat for each course according to subject matter, budget, needs, and individual creativity; but it is one which has proven to be rewarding and effective for many thousands of students. Even so, the model is an evolving structure that will never be quite finished; if it is to survive, it must continue to unfold, expand, and change in ways that will enable more people to achieve their educational, recreational, and economic goals.

REFERENCES

Beaty, Sally; Calvert, Edward; and DuBois, Jacques. "Learning by Viewing." Fund for the Improvement of Post Secondary Education (FIPSE). Videotape produced by WETA-TV, Washington, D.C., 1982.

Crow, Mary Lynn. Teaching on Television. Arlington: The University of Texas, 1977.

Flanagan, John L. "Working with Telecourses--Questions from a Professional Seminar." T.H.E. Journal, 7, no. 6 (November 1980): pp. 63-65.

Members of the Non-Traditional Instruction Committee of the Los Angeles Community College District. Letter to Deans and Chairpersons, University of California Campuses, California State University and College Campuses, Private California Universities and Colleges, 28 April 1982.

Munshi, Kiki S. Telecourses: Reflections '80. Washington, D.C.: The Corporation for Public Broadcasting, 1980.

Watson, Norman E. "Putting Some Generalities to Rest." Forum Fifty, 2 June 1980, p. 2.

Zigerell, James J. "Current Developments in Telecommunications in Two-Year Postsecondary Institutions in the United States." Television in Community and Junior Colleges: An overview and Guidelines. Los Angeles: ERIC Clearninghouse for Junior Colleges, University of California; and Syracuse: ERIC Clearinghouse on Information Resources, Syracuse University, 1980.

THE QUESTION IS ONE OF OUTCOMES

Should time students spend taking telecourses be compared to time spent on campus in the classroom, and if not, what should be the basis for determining academic credit? The answers to these two questions have been spelled out very explicitly several times during the past ten years by the California Legislature and by the Chancellor and Board of Governors of the California Community Colleges. Time spent viewing a telecourse program is <u>not</u> to be compared to classroom time, and credit for telecourses is based on learning outcomes, not on a statistical concept of weekly student contact hours.

For years weekly student contact hours have been the accepted practice for determining academic credit and the basis for state funding for classroom courses. However, when telecourses and other forms of laboratory and distance learning education were developed by community colleges, a new formula for credit had to be devised. That formula specified that one student contact hour is to be counted for each unit of telecourse study for which a student is enrolled during a census period (California Education Code, 1979, p. 16).

Willey (1982) and others note that the standard of equivalency in outcomes established by the Legislature and the Chancellor's office is the "identical standard of equivalency observed throughout the country" (p. 1). Willey describes two factors on which the standard is based:

> The traditional 50-minute class seldom if ever provides 50 minutes of systematic instruction...Television lessons, in contrast, have been tightly designed. The lesson material is presented without interruption, often reinforced by graphic illustation (p. 1).

Members of the Non-Traditional Instruction Committee of the Los Angeles Community College District also support the equivalency in outcomes standard.

In a memorandum to Deans and Chairpersons of the University of California campuses and the California State Universities, the committee states:

> It has been our experience that the rapid and compact visualization which parallels the narrative equivalent of the lecture, taken with the extensive telephone contact available to (and utilized by) students is equivalent to the 50-minute classroom hour...Each instructor is provided a private telephone line, and fourteen hours weekly are devoted to establishing and maintaining telephone communication with each student who finds it helpful (p. 2).

STATING THE ANSWERS EXPLICITLY

Telecourses have been recognized since 1976 by the California Education and Administrative Codes (Title V), which also established the criteria for evaluating telecourses. These criteria are identification and measurement of the outcomes, just as with other community college courses. Telecourses were first formally and legally defined as coordinated instruction systems (CIS) and were placed on the same credit basis as CIS courses in 1976. A position paper approved by Sidney Brossman, Chancellor of the California Community Colleges, in 1975 ("An Examination of Principles, Criteria, and the Law as Related to the Offering of Telecourses for Credit by California Community Colleges) clarified state statutes defining coordinated instructional systems and confirmed the position of telecourses in the CIS category. This paper, one of two which became the basis for formal legislation passed by the California Legislature in 1976, quotes Administrative codes defining CIS courses and stating academic standards:

> 55301. A Coordinated Instruction System in which a variety of teaching methods, including the use of mechanical and electronic devices, self-instructional material and other similar teaching techniques, may be used to convey a particular area of knowledge or skills from the instructor to the student. Hereinafter, this is referred to as "CIS"...(An Examination of Principles, Criteria, and the Law as Related to the Offering of Telecourses for Credit by California Community Colleges, p. 2).

> 55337. Credit. The responsible instructor shall evaluate each student enrolled in accordance with Section 55334 and give each student a grade (p. 3).
>
> 55339. Academic standards. The academic standards applicable to courses which include a CIS shall be the same as those applied to other courses in the college (p. 3).

Chancellor Brossman had, in December of 1973, pointed out provisions of Title V and the Education Code stating criteria for determining credit for "community college work" and for interpreting CIS regulations:

> ...both Sections 25518.5 and 25518.6 of the education code and Section 55201(e) of Title V define "one credit hour of community college work" as approximately three hours of recitation, study or laboratory work per week throughout a term of 16 weeks. These criteria are, as previously noted, to be interpreted in light of CIS regulations. (An Examination of Principles, Criteria, and the Law as Related to the Offering of Telecourses for Credit by California Community Colleges, p. 3).

In a memorandum (1975) Assistant Chancellor Archie L. McPherran cites provisions made by the California Education code for determining CIS credit. These provisions established the formula for telecourse credits.

> Another question being raised...relates, in effect, to one student contact hour per week being credited for 30-minute per week "open-circuit" television course. The concern...here is that, for example, a 30-minute TV lecture generates as much "contact" value as an hour's lecture in the classroom...ECS 11251 provides that one student contact hour be counted for each unit of CIS credit for which a student is enrolled during a census period and not vice versa (1975, p. 3).

A new law regarding telecourses was passed in 1979. SB 941 (Greorio), Chapter 1055, Statutes of 1978, which became law on January 1, 1979, repealed provisions of the Education Code relating to CIS and united CIS with independent study programs. SB 941 also required the Board of Governors of the California Community Colleges to develop Title V (Administrative Code) regulations

concerning independent study courses. Accordingly, Section 84500(a)(2) of the Education Code was amended to read:

> A community college district may also include the attendance of students enrolled in approved courses or programs of independent study, including courses or programs formerly conducted as coordinated instruction systems, who are under the supervision, control, and evaluation but not necessarily in the immediate presence of an employee of the district who possesses a valid certification document; provided that such attendance may only be included for college level credit courses and programs which are accepted for completion of an appropriate educational sequence leading to an associate degree, and which generally are recognized upon transfer by an institution of the University of California or the California State University and Colleges (Petersen, Appendix A).

As amended, Section 84500 (b) specified that

> the community college district shall determine the nature, manner, and place of conducting any independent study course or program in accordance with rules and regulations adopted by the Board of Governors of the California Community Colleges to implement the purposes of this subdivision. Such rules and regulations shall require community college districts to ensure that the components of each individual study course or program for each student shall be set out in a written record which includes the goals and methodology of the course or program, the number of units and hours of study required, the arrangements for consultation with the instructor, the work product to be evaluated, and the college facility required (Petersen, Appendix A).

By resolution, implementing and interpreting sections 84500 and 84520 of the Education Code, the Board of Governors defined independent study and emphasized outcomes as the criteria for credit: "...learning undertaken by a student enrolled in a course without the immediate presence of the assigned instructor, to be completed in accordance with prescribed objectives, for the number of credits to be awarded on satisfactory completion of the

specified learning accomplishments (Petersen, 7). "Program of independent study" was further defined as "an educational program of independent study (in) an organized sequence of courses of instruction conducted as independent studies and meeting all the requirements of this chapter. Section 84500 (c), as amended, also emphasized the achievement of "specified learning accomplishments" as a criteria for granting course credit (Petersen, p. 7).

SOME CONCLUSIONS

There is a large body of evidence (discussed elsewhere in this document) showing that telecourse students do achieve specified learning outcomes. Willey supports the view that the learning experience (outcomes) from telecourses is equivalent to that obtained in campus courses (p. 2). Members of the Non-Traditional Instruction Committee of the Los Angeles Community College District also support the findings about outcomes and, in addition, affirm the academic soundness of telecourses offered in the district. The committee adds:

> ...we believe not only that they (telecourses) serve to provide effective academic experiences for the students who complete the courses, but also that they serve as a vehicle for bringing students to the campuses for further study when their schedules or living situations permit (p. 3).

Despite the abundant legal and academic recognition of telecourses as an effective form of learning, Flanagan (1980) reports that many educators still ask

> What is the equivalency rate between hours of instruction on TV vs. hours of instruction in the classroom? The question is aimed at finding a multiplier for an equivalency formula--a single number by which the hours of television can be multiplied to see if they equal a standard requirement for hours of conventional instruction (p. 64).

Flanagan concludes:

> However, telecourses aren't that simple. Not all of the instruction in the course is contained within the television series. At least three and possibly four different components contribute to the knowledge a student gains. The instructional load for a telecourse is divided among the video series, a textbook, the study guide, and possibly class meetings; and the (division of labor) is not necessarily consistent from course to course. The TV programs, particularly, may be more or less important from course to course. The real question is whether the entire package of all the components roughly equals what is taught on campus. Does the student exit both educational experiences at approximately the same level of competency? The presence of 30 half-hour TV lessons, 12 one-hour TV lessons, or some other number should be evaluated only in terms of its contribution to the whole (p. 64).

Willey suggests that "the bottom line question is this: does television offer a learning experience that is in every respect worthy of college credit? The answer depends primarily on the individual college. If instructors are willing to blend their expertise and enthusiasm with the reading and video lessons, then without question the answer will be highly positive" (p. 2). Wyman adds, "The fact is that the use of various methodologies by more and more institutions across the country should 'put to bed' the questions of whether instructional television is comparable to 'campus-taught' classes...(p.2).

REFERENCES

Education Code. Article 2. Section 84520, p. 116.

Flanagan, John L. "Working with Telecourses--Questions from a Professional Seminar." T.H.E. Journal 7 (1980):63-65.

McPherran, Archie L. Memo #F-260 to Assistant Superintendents, Business, and Business Managers, Deans of Instruction, Deans of Admissions and Records, and Registrars. Sacramento, California: December 10, 1975.

Members of the Non-Traditional Instruction Committee of the Los Angeles Community College District. Letter to Deans and Chairpersons, University of California Campuses, California State University and College Campuses, Private California Universities and Colleges. April 28, 1982.

Office of Educational Planning and Development. "An Examination of Principles, Criteria, and the Law as Related to the Offering of Telecourses for Credit by California Community Colleges." Position paper. Costa Mesa, Calif.: the Coast Community College District, December, 1975, pp. 1-4.

Petersen, Allan L. "Regulations Permitting Attendance in Courses or Programs of Independent Study." Presentation to the Board of Governors of the California Community Colleges, December 7-8, 1978, pp. 1-15.

Willey, George A., Director, Bay Area Community College Television Consortium. Letter to Mary Lou Zoglin, Associate Dean, Alternative Learning Systems, Coastline Community College, Fountain Valley, California, May 14, 1982

Wyman, Robert, Dean of Instruction and President, Television Consortium of Valley Colleges, Sacramento, California. Letter to Whom It May Concern, May 12, 1982.

THEORETICAL BASES OF TELECOURSES

INTRODUCTION

Instructional television courses for adults are part of a movement in higher education to offer alternative forms of education. The movement began in the nineteenth century, and "alternative" referred to education whereby adults could study and receive credit for specific courses without having to participate in regular on-campus classroom settings. The first form of this "alternative learning," correspondence courses, remains an established method for taking courses from universities in the United States and Europe. But there are now several methods of receiving "distance education," and instructional television courses, or telecourses, are especially prominent.

Before reviewing some of the basic assumptions and theoretical origins of telecourses, it is important to consider some of the larger societal factors which have led to the creation of telecourses. First is the growth in the number of people wanting some form of a postsecondary education. Enrollment in higher education institutions has grown throughout the twentieth century. Not only are more high school graduates seeking a college education, but the trend toward lifelong learning, education for adults at all ages, has also increased the demand for higher education, especially in the form of distance learning. Whether their motives for education are self-enrichment, vocational training or retraining, or a degree, adults are enrolling in all forms of distance learning because they do not have the time, resources, or desire to become full-time students on a campus.

In addition to the need and desire for alternative forms of higher education, another factor in the development of new forms of distance education was the discovery and increasing sophistication of communication technologies. In this century, radio, television, and computers have been added to the printed and spoken word as modes of communication, and educational institutions have begun to explore ways of utilizing these technologies for purposes of distance learning.

Partly in response to these social developments, theorists in the fields of education, psychology, and mass communications have been developing new theories about how people, especially adults, learn. The seventeenth century theory of John Locke that children's minds were blank slates on which learning could be imposed gradually crumbled in the nineteenth century as more and more attention was paid to the conditions under which learning could best occur. Even then, little attention was paid to how adults learned. Theories of learning, like theories of personality, have tended to focus on children and adolescents. Thus, the theoretical basis of distance learning, while now important and substantial, has not completely caught up with events, especially with the technological revolution. New theories, as well as adaptations of older ones, are being developed now.

SOME THEORIES OF LEARNING RELEVANT TO DISTANCE EDUCATION

Telecourses and distance education in general have been built on an "individualist" theory of knowledge and education. "According to the traditional, Cartesian theory of knowledge, a person can quite effectively learn alone. All we really need in order to learn is a source--a teaching instrument--which may be a book, a television screen, or nature itself" (Bruffee, 1982, p. 27). According to this perspective, education requires a communication process, but not always in the form of discussion with other people. Social relations involved in discussion, while often useful, are not essential to learning.

When applied to televised instruction, this theory suggests that

> Televised programs, both educational and commercial, are designed to convey knowledge in much the same way as a lecture conveys it. Television is a source. As a teaching instrument, it transfers information from the television screen to the mind of the individual viewer (Bruffee, p. 27).

This "individualist" theory of learning thus expands the possible "sources" of learning. It also directs study about the learning process to the individual learner rather than only at the teacher as a source.

Developments in psychological research and theory have also encouraged educational theorists to consider the individual involved in the learning process. One observer has summarized the impact of this change of focus on the teaching process:

> Although the class is the model for education in most schools, there is increasing emphasis on the centrality of the individual learner. The old single-stage model of learning...has been abandoned [for] the multi-stage model with the idea of an individual, idiosyncratic coding or mediation between the stimulus and response... The multi-stage mediational learning concept exposes the delusion that learning is an event of social interaction (Wedemeyer, quoted in Holmberg, 1981, p. 34).

The focus on the individual in the learning process has been an especially productive direction for research on how adults learn, since higher education usually deals with complex types of learning. Often called "cognitive psychology" or "information processing" theory, this area of psychology has been concerned with "the existing cognitive structures the individuals bring to the learning situation" as well as with the nature of the subject being taught (Wildman and Burton, 1981, p. 6). Thus, the assumption is that when learning occurs, it is a result of information being designed and presented in a way appropriate to the learner's cognitive framework. There is no bias toward instruction being delivered by a teacher in a classroom or any other single format. Rather the focus is on the correct design and preparation of the instructional materials and accurate identification of the learning characteristics of the learners, two central precepts in the development of distance learning materials.

Telecourses and distance learning are also indebted to another psychological school of thought, B. F. Skinner's behaviorism. From behaviorism come some of the techniques which have been used in the design of telecourses. Often called the "systems approach," these techniques have attempted to make instructional design more orderly and scientific by combining what is known about the students, the teaching capabilities of the medium, and the structure of the subject matter to produce effective multi-media courses. Interestingly, the adoption of the techniques of the "systems approach" does not indicate

adoption or acceptance of Skinner's stimulus-response model of learning. But the techniques themselves have proven to be useful both to students and to producers of telecourses.

The two "systems approach" techniques used in many telecourses are the identification of the target group and the organization of the course around specific instructional objectives stated in terms of demonstrable student performance. Description of a target group involves, for example, studying the general educational background of students, their motives in taking telecourses in general and a specific course in particular, their age, sex, family and employment situations. With this information, course developers are in a better position to choose teaching strategies and formulate content. Specifying instructional objectives has several advantages. First, it helps to provide a focus for the lengthy and complex task of producing television courses. A statement of course goals and instructional objectives also provides a vehicle for objective evaluation of course content as well as an objective system for evaluating the effectiveness of a telecourse in reaching its goals. Finally, when provided to the learners, instructional objectives can help direct attention, study, and review throughout the course. Regarding the use of objectives, Holmberg observes that "it is natural to regard demonstrable behaviour not as the total effect of learning but as a sign indicating the probability that the desired learning has or has not, taken place" (p. 38). Adoption of the practices of identifying target audiences and specifying student learning objectives are being used in all forms of education; even if they do not guarantee good instruction, they provide a means for identifying weak and ineffective instruction.

In summary, the theoretical origins of telecourses are in several disciplines and schools of thought. Yet they provide the concepts which are central to this form of instruction. Holmberg concludes, "While on the one hand the behaviourist school has exerted a strong influence on the practice of distance education, principles emphasized in cognitive learning theory as well as principles from motivation and personality theories and social psychology are evidently decisive for much of what is achieved in this type of education" (p. 38).

If looking at the theories of learning helps us to understand the learner's side of the learning process, then it is equally important to look at the other side, the "source" or, in the case of telecourses, the media used to present the course information. Here, too, there are some basic theories or assumptions, specifically about the teaching capabilities of the various media used. Telecourses are not innovative because they are a form of distance education but because they utilize new communicative technologies.

When studying telecourses, it is easy to forget that television is but one medium used to deliver content. Most telecourses also use print in the form of textbooks, study guides, and instructor correspondence, and the spoken word via the telephone or actual face-to-face discussions or advising sessions between the teacher and student. Other media may include audiotapes, computer-scored test materials, and newspapers. Of these, the print materials, especially the textbook, carry the bulk of the content. Most telecourses used in American higher education utilize standard textbooks which are respected by faculty members and have received high marks for readability and interest by students. It is generally accepted that the print medium can present some kinds of information much better than other media, such as present detailed and complex explanations, lists of facts, complex graphic displays, and routine drill and practice (ITV Center, 1978, p. 31).

The role and strengths of the print medium for presenting information are well understood and accepted. But while the textbook is an important part of telecourses, it is not the whole course.

> A textbook gives all relevant facts and if it is a good textbook, it does so in a clear and logical way, but it does not guide or teach. That is to say, it does not induce the student to learn...A distance-study course guides and teaches by giving complete explanations with elucidating examples, by providing exercises of various kinds and by constantly referring to what the student has already learnt [sic] to master (Holmberg, p. 56).

The functions of the whole course identified above by Holmberg are accomplished in a telecourse by the study guide, the television programs, and instructor-student written and verbal communications. Thus, it is important to understand that telecourses, as multi-media systems of instruction, are designed so that each of the various media used handles specific instructional activities. Further, the media are designed to be coordinated and integrated so that each medium (or component) reinforces information presented in another component. For example, in a course on child psychology, the textbook may present in some detail the experiments and reasoning of Jean Piaget that lead to his theory of conservation as an aspect of cognitive development. The accompanying television program shows reenactments of these famous experiments that vividly demonstrate the theory and show how children of different ages have quite different mental abilities regarding conservation tasks. The study guide provides learning activities and self-test questions to help students ascertain whether they understand and can apply the concepts. And finally, the telecourse instructor answers student questions, suggests and monitors other learning activities such as direct observation of children and evaluates student work (Lesson 13, "Preschool Mental Development" in The Growing Years). Thus, a telecourse is truly a multi-media coordinated instructional package.

The role of the television programs in a telecourse and their effect on learning is both generally agreed upon as well as debated. On one hand, "both radio and television, audio- and video-recordings are usually held to be good motivating forces and assumed to exert greater affective influence than print or written communications" (Holmberg, p. 65). Most distance educators cite television's potential for demonstration, for bringing unique visuals from laboratories, historical settings, dramatizations, and foreign places as enrichment to the educational process. Some recent research suggests how students use the programs. A University of Mid-America study reported that "learners in UMA courses [tend] to react negatively to those aspects of the television programs perceived by learners as having exclusively an entertainment function rather than one of instruction." The study also concluded that the broadcast television programs serve as a pacing device for students taking the telecourses (Brown, pp. 54-55).

However there is debate between knowledgeable observers over the role of media such as television in learning. On a popular level, McLuhan has asserted that the medium is the message, suggesting that each medium in some way transforms the content being conveyed. And much recent research elaborates on that thesis. For example, Salomon has presented an extensive analysis of how television utilizes various "symbol systems" differently than other media. He concludes that a learner will receive different content and different meaning from different symbol systems, and that we can teach people to learn the mental skills necessary for understanding the symbol systems of different media (Salomon, 1979). Yet others in the field of educational media disagree and assert that media are mere vehicles rather than active agents in the learning process. Clark states that "We cannot validly claim any advantage of one medium over another when student achievement is the issue" (Clark, 1982, p. 60). Thus, for Clark, the choice of media to be used in a course is simply convenience, resources, and availability. Both sides agree television can teach but disagree over whether television or any of the new communication technologies change the teaching-learning process in perhaps subtle but pervasive ways.

TELECOURSES: LEARNING FROM A DISTANCE

A final assumption of telecourses arises from its method of operation whereby students are independent and autonomous during much of their course work. Telecourses are designed to appeal to and serve mature and self-motivated learners. At the same time, telecourse producers point to one of the goals of higher education: to contribute to the growth of student autonomy and ultimately to self-directed learning.

For some, the most important aspect of telecourses is in promoting and serving student independence: "the distant student is placed in a situation where he has much greater chances of individually selecting what he is to apply himself to than those conventional students for whom classroom attendance is compulsory" (Holmberg, p. 26). One result of this freedom is that students may complete only the part of the course that is immediately useful and

important to them. In light of this learner autonomy and freedom, dropout rates that are higher than those for classroom courses are neither surprising nor undesirable. "In my view, this [the higher drop-out rate] is wholly acceptable and should not be considered a negative comment provided students are offered proper facilities. Whether or not they make use of what is offered is up to the individual students" (pp. 19-20).

Under the distant learning framework of telecourses, responsibility for learning is on the shoulders of the student. However, the responsibilities of the institutions designing, producing, and offering telecourses are large. First, such a system requires the course components to be clear, interesting (motivational), and flexible, as well as to achieve academic standards of accuracy, objectivity, and completeness. A telecourse does not have the classroom's "captive audience" and must show the importance, excitement, and relevance of the subject to the student early in the course if it is to hold that student's voluntary commitment. Further, the institution offering telecourses needs to decide what are the "proper facilities" needed for students to remain in the course if they wish to do so. Practical considerations such as enrollment by mail, evening and weekend faculty office hours, telephone "office" hours, frequent written communication between instructors and students, library use, and ordering textbooks by mail, as well as prompt feedback to students concerning results of tests and assignments, are but a few of the support services institutions have offered telecourse students.

Telecourses use a new medium to accomplish distance learning for adults. In doing so, they set important goals of independence and autonomy for students and new roles of design and student support for faculty members and the institutions offering telecourses.

REFERENCES

Brown, Laurence A. Learner Responses to the Use of Television in UMA Courses: Working Paper No. 8. Lincoln, Nebr.: University of Mid-America, July 1975.

Brufee, Kenneth A. "CLTV: Collaborative Learning Television." Educational Communications and Technology Journal 30 (1982):26-40.

Clark, Richard E. Review of Media in Instruction: 60 Years of Research, by Gene L. Wilkinson, in Educational Communications and Technology Journal 30 (1982):60.

Holmberg, Borje. Status and Trends of Distance Education. New York: Nichols Publishing Co., 1981.

ITV Center. ITV Close-up: The First Six Years. Dallas: Dallas County Community College District, 1978.

Salomon, Gavriel. Interaction of Media, Cognition, and Learning: An Exploration of How Symbolic Forms Cultivate Mental Skills and Affect Knowledge Acquisition. San Francisco: Jossey-Bass Inc., 1979.

"The Growing Years." Telecourse, produced by The Coast Community Colleges, the University of California at San Diego, and McGraw-Hill, Inc., 1977, revised 1982.

Wildman, Terry M., and Burton, John K. "Integrating Learning Theory with Instructional Design." Journal of Instructional Development 4 (1981):5-14.

TELECOURSES: A NECESSARY ALTERNATIVE

In Fort Worth, Texas, a woman dictates the answers to an astronomy self-quiz into a voice-activated typewriter. Suffering from a severe degenerative disease of the nervous system, she is completely paralyzed and confined to her home. Nevertheless, she is earning an A in the telecourse, "Project: Universe," which she is taking through Tarrant County Junior College.

In Southern California, a middle-aged woman wearing a veiled hat and rose corsage receives her A.A. degree, which she has earned through telecourses. Her children attend the ceremony, which takes place at the California Institution for Women, where the woman has been imprisoned for several years.

In the remote village of Kalaupapa, nineteen residents of a leper colony are enrolled in a sketching telecourse. The lessons are viewed in a library, and the instructor flies in from Molokai four or five times a semester to advise students and facilitate the course.

In London, England, arrangements are made for a private presentation of the telecourse "The Growing Years" to a young pregnant woman. A faculty person is dispatched to assist and counsel this very privileged student...an Arab princess.

These are just a few of the more colorful examples of the unique student body which is served by telecourses. But although these case histories are interesting, they obviously represent only a small portion of that student audience. The vast majority of television students would be undistinguished if you passed them on the street: not severely handicapped, not prisoners, not suffering from leprosy, and certainly not Arab princesses. They are unique only in that they have chosen an alternative form of education rather than the traditional classroom experience. Some of them have chosen the telecourse alternative out of necessity, some because of convenience, and some because independent learning is more rich and satisfying to them than traditional modes.

The percentage of students for whom telecourses are the only viable alternative for obtaining an education is a small, yet significant number. These are the non-mobile students, those for whom the telecourse format is a necessity.

Some of these students have poignant stories, such as the handicapped woman mentioned in the introduction to this article. In spite of the fact that many campuses in the United States today have facilities for handicapped students, there are others for whom even wheelchair ramps, adapted bathrooms, and lectures given in sign language are inadequate compensation. For these students, the opportunity to learn and earn college credit at home, with sensitive support from the learning manager at a sponsoring college, is the deciding factor in whether or not they can seek an education.

The telecourse audience also includes another unique, non-mobile audience, those who are incarcerated in prisons. Rapists, murderers, terrorists--all have been telecourse students, as well as the more typical prisoner-student, who has been confined for a relatively minor crime. Sympathy for these students is perhaps not so profound as it is for the handicapped; nevertheless, many of them have been disciplined scholars and eventually earned A.A. degrees. If the goal of our penal system is rehabilitation rather than punishment, then surely the role of telecourses in that process is an affirmation for our society.

Moreover, telecourses reach citizens in rural communities which are beyond commuting distance from colleges. In British Columbia, the Knowledge Network is presenting telecourses throughout the province, reaching sparsely populated areas, and including students who live in off-shore boats and installations. Alaska, New Mexico, and West Virginia are further examples of areas where telecourses are reaching rural or remote areas, and telecourses now have the distinction of being delivered to some of these areas by van, by boat, and by plane.

Elderly students who cannot cope with the logistics of campus attendance are also beneficiaries of the telecourse alternative, as are mothers of young children who--in spite of lack of time and funds for child care to allow

them to leave home for blocks of time each week--can obtain an education through telecourses. Additionally, large numbers of military students, such as those who utilize programs through Norton Air Force Base in California and Dover Air Force Base in Delaware, are served by telecourses. A central Texas college now even offers telecourses to military personnel overseas.

The majority of telecourse students, however, are mobile enough to attend traditional classes. Time, as well as travel expense, is saved by not having to come to campus, and programs can usually be viewed at hours that do not conflict with the workday. Interaction with the study guide replaces much of the interaction with an instructor and can be arranged according to individual convenience. "Convenience" is the most frequently cited reason for taking telecourses (2, 8, 9, 11, 15).

Demographic studies portray the typical telecourse student as slightly older than average, with substantial college experience, seeking a degree, and fully employed (2, 6, 7, 8, 9, 10, 11, 13). One study indicated that at least three-fourths of students are employed full-time and, if housewives are counted as workers, only a fraction of telecourse students are unemployed (9).

The flexibility which is built into telecourses allows a busy person to manage classes without sacrificing job and family responsibilities. Telecourses are often taken as a supplement to, rather than a replacement for, traditional courses. Studies suggest that they enable many students to progress through college more rapidly than would have been possible otherwise.

In much of the discussion regarding the merits of telecourses and the reasons students take them there is a subtle, implied assumption: that given a choice, if transportation and time problems did not exist, most students would prefer a traditional classroom format. Such is not the case. A dominant theme emerges from profiles of telecourse students: most are taking telecourses because they prefer them as a mode of study.

Independent study is not a new phenomenon. Distance study programs have existed for decades and, for even longer, most colleges and universities have allowed selected students to earn credit through self-directed work

which did not require attendance at lectures or seminars. Substantial evidence exists that many people learn best when they can work independently, when they themselves can plan and execute when and how they will learn.

Glenda Riddick's study unearthed two interesting differences between telecourse and campus students (14). The retention of language input by visual, rather than aural, means was substantially higher among telecourse students. This suggests that these students thrive on the high visual input of the television program as well as the reading material, more than they would in a classroom lecture. The other significant difference is that, given a choice, most campus students prefer group working situations; telecourse students prefer to work and study alone.

Telecourses are an ideal format for a student who needs to and can develop independence. To experience these courses fully requires a student who is highly motivated and disciplined, who does not need a traditional structure to keep pace with the material. Many students do best working in close interaction with an instructor and classmates; they need and prefer a working schedule that is imposed on them from outside, rather than from within themselves. Others, however, do best in a learning situation such as is described by Borje Holmberg:

> The distant student is placed in a situation where he has much greater chances of individually selecting what he is to apply himself to than those conventional students for whom attendance in a classroom is compulsory. This is so because he is provided with--and works on his own with--self-instructional material...which he can personally influence to a greater extent, through his responses or initiatives, than is normal in a classroom situation (7, p. 26).

To insist that the only way a person can and should learn is in a classroom of students who are constantly monitored and guided by an instructor is naive and restrictive. All of us are constantly learning throughout our lives--through what we read, through what we see and hear, through what we experience. Each of us, if even unconsciously, ultimately chooses the situation in which we will learn best. Telecourses, then, are a valuable and necessary alternative to classroom education.

REFERENCES

1. Center for Learning and Telecommunications. "West Virginians Earn College Credit through Statewide Telecourses." Telescan 1(March/April 1982):11-12.

2. Clement, Nancy. "CIS Student Surveys: A Comparison of Telecourse Students in Fall, 1976 and Fall, 1980." Coastline Community College, July, 1981.

3. CCC. "Military Education Program for Norton and Dover Air Force Bases." Brochure. 1981-1982

4. Crow, Mary Lynn. Teaching on Television. Arlington, Tex.: The University of Texas at Arlington, 1977.

5. Hershfield, Allan. "The National University Consortium--One Year Later." Change 13(1981):43-45.

6. Hewitt, Louise M. An Administrator's Guide to Telecourses. Costa Mesa, Calif.: Coast Community College District, 1980.

7. Holmberg, Börje. Status and Trends of Distance Education. New York: Nichols Publishing Co., 1981.

8. ITV. "Instructional Television Weekend Offerings Survey." Ft. Worth: Tarrant County Junior College.

9. ITV Center. ITV Close-up: The First Six Years. Dallas: Dallas County Community College District, 1978.

10. McGraw-Hill Book Company. Research and Evaluation Department, "The McGraw-Hill Growing Years Telecourse." Research Report, no. 5 (August 1979).

11. Mount, George R., and Walters, Sharon R. "Traditional versus Televised Instructional Methods for Introductory Psychology." Journal of Educational Technology Systems 9 (1980-81).

12. "Outreach Target: Kalaupapa." Community Colleges, February 1982, p. 8.

13. "PBS and College Education." Time, 5 October 1981, p. 46.

14. Riddick, Glenda. "Cognitive Mapping of Telecourse Students," Fountain Valley, Calif.: Coastline Community College, Spring 1979.

15. Vander Haeghen, Peter. "How Offering Telecourses through Open Broadcast Can Help Solve the Energy Crisis." T.H.E. Journal. 7(January 1980):53-54.

16. Zigerell, James J.; O'Rourke, James S.; and Pohrte, Theodore W. Television in Community and Junior Colleges: An Overview and Guidelines. Los Angeles: ERIC Clearinghouse for Junior Colleges, University of California; and Syracuse: ERIC Clearinghouse on Information Resources, Syracuse University, 1980.

CPEC: TELECOURSES HELP TO MEET PUBLIC NEEDS

The California Postsecondary Education Commission (CPEC) has asserted that telecommunications can be used to teach more students more effectively and thus help to meet major educational needs of California students. The Commission also observed that educational institutions must be encouraged to make greater use of telecourses in order to meet these needs. In a November, 1981, report, CPEC cited five specific public needs: basic adult competencies or survival skills; understanding of government, public issues, and services; employment information and occupational skills; social responsibilities and individual development; and continuing professional development. ("Linking Californians for Learning," 1981, p. 49).

CPEC acknowledges that courses are available in standard college degree curricula to meet most of these needs; however, telecommunications can be used for all of these needs "to extend the potential of courses and other forms of teaching." Although not all colleges and universities should be expected to use telecommunications, the commission believes they should be "encouraged to plan its use cooperatively from a statewide perspective" rather than on a local basis only (p. 3).

TECHNOLOGY IS AVAILABLE

In its report, the commission noted that California has a wealth of telecommunications technology which can be used by its public colleges and universities to deal with costly social needs in two ways:

> Major social problems requiring widespread education can be addressed more effectively if telecommunications supplement traditional means of instruction. Teachers

> and learners can now overcome the barriers of time and distance in communicating with each other electronically, and learning at a distance can help conserve badly needed energy resources such as gasoline (p. 3).

Developments in education and technology, together with experience accumulated during the past ten years, should help to facilitate greater use of telecommunications. These developments include: better quality and greater abundance of videotaped programs and interactive computer programs, both of which increased significantly; the increasing experience of educators in technical skills and use of telecommunications in research, consultation, and teaching; improved student support services, resulting in higher rates of course completion; decreased costs per student for instruction as institutions learned to work together; and more knowledgeable educators.

Created in 1974, CPEC is a state agency which coordinates and plans for statewide education beyond high school. It "is responsible for assuring that the State's resources for postsecondary education are utilized effectively and efficiently; for promoting diversity, innovation, and responsiveness to the needs of students and society; and for advising the Legislature and the Governor on statewide educational policy and funding" ("Linking Californians for Learning," 1981).

APPROPRIATE INCENTIVES NEEDED

CPEC recommended in its report that "appropriate incentives, both professional and financial, should be provided to facilitate wider use of technology in teaching." Noting that there is still some reluctance to use telecommunications in education, the commission points out, "...throughout the centuries, educators have created and adopted new technology to improve their teaching and intensify what they can bring to their students...now electronic communications can bridge most constraints of time and distance." This will mean, according to the commission, changes at the institutional level in priorities and practices

and at the state level in funding patterns and administrative regulations. Since telecommunications can be used to teach more students more effectively at reduced costs, institutions and the state should therefore remove barriers that restrict "the effective use of technology for regular postsecondary curricular instruction" and provide needed incentives (pp. 68-69).

The commission rejects the notion that greater use of telecommunications will cause a "demise of face-to-face talk and campuses."

> Instead, this report envisions a new chance for more interaction, not less, between individual students and instructors. And as this report suggests, most institutions already avail themselves of this new opportunity, at least to some extent. Unlike those fabled trainmen who thought their industry was merely railroads rather than transportation, faculty increasingly see their teaching function not merely as lecturing but as helping individuals to learn. There are so many ways of communicating that the current revolution in communications technology ought to lead educators to reflect about combining those ways most fitting for each educational task ("Linking Californians for Learning," p. 80).

In summary, CPEC said that California has substantial telecommunication capabilities under public control and the technical means to "share information and instruction with far less travel and faculty repetitive effort." No technological reason prevents a more statewide use of these means for both formal and informal learning." At the same time, the state has educational needs beyond compulsory schooling that will serve the general public. The commission concluded:

> Not only have experiences of the past decade confirmed the utility and efficiency of technology for instruction; in some cases, important public needs cannot, as a practical matter, be addressed statewide without some use of telecommunications...As far as state government is concerned, neither educational institutions nor telecommunication systems are ends in themselves. But combined, their public value multiplies. Based on the progress of telecommunications for learning during the 1970s, the questions for California planners and policy makers in the 1980s will be not <u>whether</u> but <u>how</u> to employ this combined resource for the greatest public good (pp. 79-80).

Robert Wyman, Dean of Instruction and President, Television Consortium of Valley Colleges, supports the commission's view. According to Wyman, "...the increasing cost of instruction, the greater need of students to enroll and to learn, and the diminishing ability of campuses throughout the country to provide services" is an issue that needs to be addressed (Wyman, 1982).

The importance and potential effectiveness of telecourses are stressed by Bryant, who believes that the potential of telecourses "is not just a dream"...the chance to take college courses by television is "a very real part of life for thousands of Americans seeking personal growth and development without destroying their schedules or life-styles..." ("Learning from Viewing," 1982).

REFERENCES

"Learning by Viewing." Videotape. Fund for the Improvement of Post Secondary Education (FIPSE). Produced by WETA-TV, Washington, D.C., 1982.

"Linking Californians for Learning." California Postsecondary Education Commission (CPEC) Report 81-28, Sacramento, Calif.: November, 1981.

Wyman, Robert, Dean of Instruction and President, Television Consortium of Valley Colleges, Sacramento, California. Letter to Whom It May Concern, May 12, 1982.

THE ROLE OF INSTRUCTIONAL DESIGN IN TELECOURSES

In the years since broadcast television was first used for formal adult instruction in 1956 at Chicago TV College, different systems for planning and developing courses have been tried. In the last ten years, the basic telecourse format of twenty to thirty television programs, a text, study guide, and testing materials has become established, as has a commitment to using principles of instructional design in all phases of production. But the use of the systematic approach, which is basic to instructional design, is not some idealist's dream. As Mittelstet says, "these are methods that have evolved and tend to work well..." (p. 53).

But what is "instructional design," and how does it help to ensure the production of quality telecourses? In general terms, instructional design is a process used to ensure that students can learn from a particular course. It is based on the idea that the first responsibility of producers of a telecourse is to students. No student should fail or become frustrated because of poorly presented or inaccurate content, confusing course goals, inappropriate expectations of the students, or inconsistent information over exactly what students need to know and do to pass the course. So, someone with responsibility for the design of the course participates in its development as a representative of the students who will ultimately take the course. The goal of design is that each student will learn what the course intends to teach.

THE PURPOSES OF INSTRUCTIONAL DESIGN

The specific purposes of instructional design are to: (1) select appropriate instructional strategies for the target audience; (2) state course goals and specific instructional objectives in terms of student learning; (3) ensure

internal consistency and integration between course components; (4) ensure that course content is accurate, appropriate, clear, and unbiased.

Details of the process of designing specific telecourses differ somewhat, although the major steps seem fairly similar for most major producers of telecourses in the United States. The model used by the Dallas County Community College District, The Coast Community Colleges, the Southern California Consortium for Community College Television, and Miami-Dade Community College has resulted from cooperative production and use of telecourses. This model has been described by Mittelstet (1979), Pohrte (1980), and Purdy (1980). A design process used by Wayne State University in its production of a life science course followed similar steps, but also involved adult students in formative evaluation during production (Baba, Schermer, and Shifrin, 1980). Even more formal and extensive formative evaluation has been a part of the design process for instructional television from the University of Mid-America (McBride, 1976, and Aversa and Forman, 1976). The process used by the British Open University (O.U.) in its production of distance-learning courses is described by Holmberg (pp. 99-100, 1981). While role of television programs in O.U. courses differs somewhat from American telecourses, O.U.'s use of educational designers and principles of instructional design are quite similar.

Common to all of these models of telecourse design are three elements: (1) identification of the intended audience for the telecourse; (2) a design and production organization consisting of a team of experts; and (3) course goals and specific instructional objectives stated in terms of demonstrable student behavior and activities. This article will describe each of these elements and give illustrations of how they have worked in the production of telecourses.

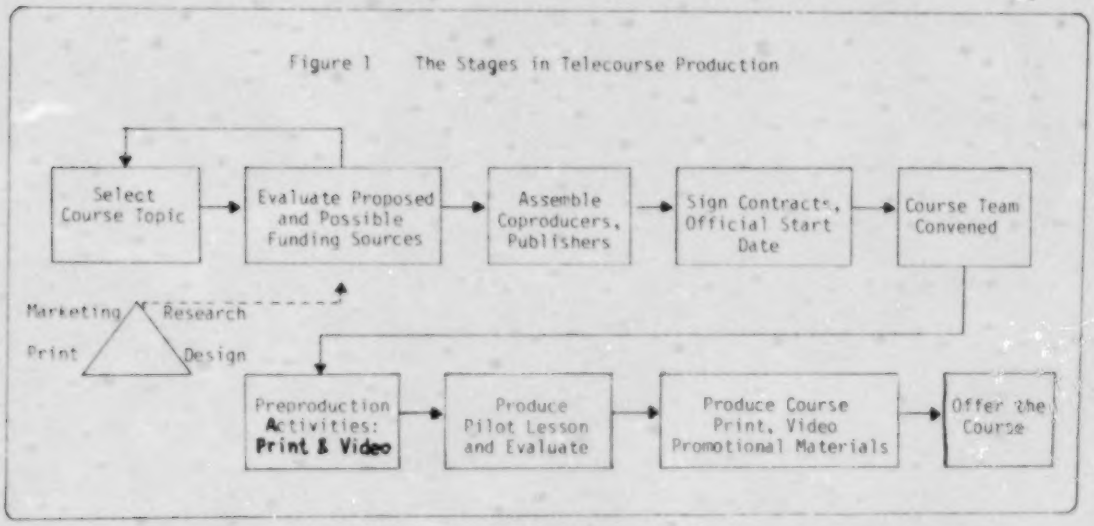
SELECTING TELECOURSES FOR PRODUCTION

Design and production of a telecourse takes between twelve and twenty-seven months of work by a staff of between ten and twenty-five people. The budgets range from about $100,000 to more than a million dollars. Consequently, the

decision to produce a course is not made quickly or easily. Selecting a telecourse requires collecting much information about a proposed topic.

Figure 1 shows the general stages of telecourse production as followed by Coastline Community College and KOCE-TV (both of which are part of the Coast Community College District). Many "design" decisions are made in the stages represented by the first two boxes in Figure 1, long before course production begins. These decisions are based on what the Coastline College staff calls "pre-course research." The decisions may include the audience to which the course will be directed, the textbook or other required print materials for students, possible publishers and co-producers, the number of credits and the academic level of the course, and the number of television programs. In general, the pre-course decisions focus on the curriculum and the target audience of the course.

Figure 1 The Stages in Telecourse Production



In clarifying the curricular aspects of the course, precourse research must review many sources. For example, a proposal is made to produce a telecourse in the area of interior decorating. A search of college catalogs reveals that the course is common in two- and four-year institutions across the country, but it might have different departmental affiliations: home economics (often called "home and family living" in two-year colleges) or fine and applied arts. The course is almost always listed as a transfer course for which a student will receive three units of credit. Further research and

consultation with faculty consultants reveals that a crucial difference is whether the course serves as the introductory course for students who eventually want to be certified and licensed interior decorators or whether it is used by students as "elective" credit. Another way to look at the differences is to determine whether the course focuses on the theory and principles of design or on the application of those principles. Course outlines are collected and compared and possible textbooks for the course are identified and evaluated. On one hand, the producing institution decides it does want to serve the large audience of adults who want to take a home decorating course for self-enrichment purposes. However, it is also decided to design the course as a transfer course, including basic principles of design.

In order to ensure academic credibility, a textbook is selected which has a strong record of adoption in two- and four-year institutions. It also is a highly readable book with visual appeal. Further, it is decided to have an academic advisory committee which includes faculty members from two- and four-year institutions, as well as practicing interior designers who can provide practical consumer information.

The above description summarizes the precourse research and decision-making process that led to the production of "Designing Home Interiors" coproduced by The Coast Community Colleges and the Rancho Santiago Community College District in 1978. The descriptive materials for the course state that:

> Designing Home Interiors meets the needs of the person planning his or her own home environment, whether a mobile home, apartment, single-family dwelling, or condominium. This course also fulfills the requirements of an introductory interior design course within one-year certificate program, a two-year degree program, or a transfer program for a four-year institution ("Designing Home Interiors," p. 1).

The example of the curriculum assessment and pre-course research for "Designing Home Interiors" demonstrates the complexities involved in selecting a course topic. Once the decision is made to produce a course which meets various local, state, and national curricular patterns, that decision sets the broad

mandates under which the team of people who design and produce the course must operate. To a large extent, it also determines the target audience for a course.

Research has uncovered the general characteristics of telecourse students (that profile is described elsewhere in this sourcebook). However, the general profile varies considerably from course to course. For example, students taking a child development telecourse will differ greatly from those taking an astronomy telecourse, even though both courses may be offered as undergraduate, transfer, three-unit courses. Students taking child development may include public school teachers seeking updated information on child psychology, adults wanting a how-to course in parenting, psychology majors filling the requirement for courses in their field, and students with other academic majors filling general "social science electives" requirements. This illustrates an important fact about a telecourse audience: the audience is not one, but many. The challenge becomes producing a course which serves the needs, interests, and abilities of a diverse group of people, whose characteristics the course team can only roughly predict. Munshi (1980, pp. 9-11) has attempted to describe telecourse audiences by type of telecourse. And Pohrte (1980) has outlined some of the procedures which can be used to identify a potential student population and its needs. These are important advances in the effort to learn more about telecourse audiences.

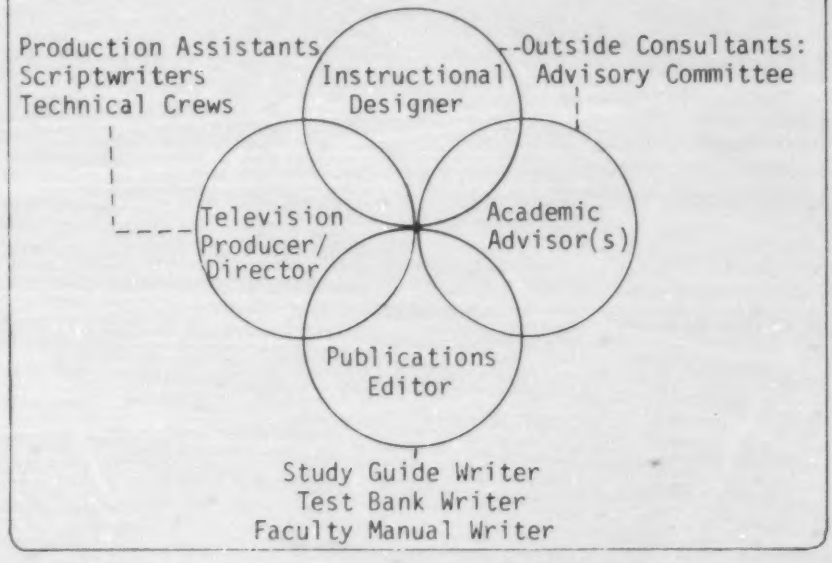
Once the overall dimensions of the course content, the basic purposes of the course, and the target audience have been identified, the process of designing and producing the course can begin.

THE COURSE TEAM AND HOW IT FUNCTIONS

The telecourse design process at The Coast Community Colleges is based on a concept where specialists in academic content, instructional design, video production, and publishing are brought together as a team specifically assigned to develop the course. This is the first step taken after the precourse

research is completed, funding is secure, and contracts are signed (the fifth box in Figure 1). Figure 2 graphically depicts the primary members of the course team. Often, the instructional designer serves as the course team chairman, coordinating the schedules of production for the various course components. Each of the four primary team members directs or coordinates the work of additional personnel responsible for specific activities, including clerical and technical employees.

Figure 2 Course Team



As mentioned earlier, the concept of a team organization for production of telecourses is a common practice. In the early days of the British Open University, Sir Walter Perry explained his reasons for the team approach.

> First we had to have not only just one university teacher, with his thoughts and ideas about the objectives, contents, and methods of presentation of the course, but several because our courses were to be multi-disciplinary as well as multi-media in nature. This, in turn, meant that each teacher would have different and inevitably conflicting thoughts and ideas which would somehow have to be reconciled with each other to lead to an agreed final version. Second, since the university teachers...would mostly be unfamiliar with the special problems both of educating adults and of teaching at a distance, we would need the advice of other experts, in particular educational

> technologists and television and radio producers, in order to determine the method of presentation of the course (Perry, quoted in Holmberg, 1981, p. 99).

In the United States, use of multiple academic advisors often occurs because telecourses are coproduced by several institutions, and it is important for eventual acceptance and use of the telecourse that a variety of academic and institutional viewpoints be represented. As is implied by Perry, membership on the course teams may be for practical as well as instructional reasons. Mittelstet also observes that "the amount and scope of faculty participation increases as the target audience of the telecourse shifts from one that seeks personal enrichment and self-improvement to one that desires 'academic transfer' for a higher academic degree" (1979, p. 58). Academic participation may also come in the form of special consultants or an advisory committee which functions to review the content decisions of the course team. Examples of various ways faculty members have been included in the production of telecourses are described elsewhere in this document.

The course team will function throughout the process of development of the telecourse, although some members will join early or complete their assignments before the completion of the whole project. For example, the work of the instructional designer and academic advisors will be extensive in the early stages of planning the overall course content outline. The television producer, while participating in early stages, will begin heaviest work at a midpoint in the project and not conclude until after the print materials have been submitted to the publishers. Maintaining integration of content and learning strategies as production of each course component proceeds under the direction of several staff members and perhaps in different locations is another reason the core team members must keep in close contact and have a shared understanding of the course purposes and content parameters.

THE COURSE DESIGN ELEMENTS

In most telecourses, the basic structure of the course--its sequence, topics, breadth and depth of content presentation, and overall goals--is established early in the development process by the course team members, especially the academic advisors and the instructional designer (this part of the process is included under the general heading of "Preproduction Activities" in Figure 1).

A major commitment of instructional design theory (described elsewhere in this document in more detail) is that all statements of course goals and instructional objectives be presented in terms of demonstrable student behavior or activities. For example, the telecourse "The Growing Years" produced by The Coast Community Colleges and the University of California at San Diego, in association with McGraw-Hill, Inc., has the following course goals:

> By the end of the course, students should be able to:
>
> - Recognize genetic, biological, environmental, and sociocultural influences on development.
> - Identify and discuss some of the most important aspects of normal physical, mental, and personality development.
> - Relate child development research and theory to real-life situations.
> - Recognize the diversity of approaches in child development research and theory.
> - Distinguish between the popular conceptions of rigid developmental stages and the actual flexibility that occurs in the developmental process.
> - Demonstrate openness and objectivity toward issues, theories, and orientations in child development ("The Growing Years," 1982, p. 4).

These goals represent the combined efforts of two- and four-year academic advisors to describe a course which would be useful to the multiple audiences for this course: people needing practical information to help them parent or teach or counsel children and students whose goals may be a major in psychology or perhaps a career in that field. The advisors shared a concern that students taking this course should be exposed to and exhibit an attitude of objectivity toward the subject matter. This last goal demonstrates the important fact that telecourses, like any form of education, have underlying values which students are expected to learn, even though the values are often implicit rather than explicit in the educational process.

Although the course goals are stated in terms of student performance, they also serve to set overall course themes and content parameters. Thus, in the television programs for the child development course, effort was made to show more than laboratory research concerning child development; children are seen in their natural settings in home, school, and at play with peers. Since at least part of the target audience would be students filling general education requirements with this course, the course team members assumed that students might not be familiar with the specific changes in physical, mental, and emotional abilities of children at different ages. Consequently, throughout the series, the programs presented children demonstrating those changing abilities.

After the course goals are selected, the academic advisors and the instructional designer propose the specific lesson topics and instructional objectives for the course. The lessons correspond to the number of television programs and to the number of chapters in the study guide for the course. These topics usually reflect not only the preferences of the advisors and the conventional topics included in similar courses across the country, but they also are an expression of topics, sequence, and approach of the textbook chosen for the course. Thus, for example, the textbook for "The Growing Years" is A Child's World: Infancy through Adolescence (McGraw-Hill, 1982), which has as one of its themes the interaction of genetic, biological, environmental, and sociocultural influences on development.

Instructional or learning objectives are developed for two reasons: to help students know what is expected of them throughout the course and to help maintain order and direction in the production process. Each lesson usually has between five and ten objectives, which are listed for students in the study guide chapters; each television program may treat from three to five of the objectives, depending upon the visual potential and the importance of each objective. Text or other print information is available for the students on all of the objectives. To complete the process, the evaluation instruments prepared for the students reflect the instructional objectives.

It has not been clear from research how much students have used and profited from the reading of instructional objectives as they proceed in the course. But it is clear that students in distance-learning situations appreciate and do well in courses which have an appropriate and logical instructional design. Holmberg's conclusion regarding objectives summarizes the issue: "Although it is thus rather uncertain as to what extent and how students benefit from reading a list of specified learning objectives, there can be little doubt that they serve a useful function as planning devices, as control instruments to be used by course developers and as eye-openers to the developers when they confront their pet subject areas with the needs of the students" (1981, p. 46).

OTHER DESIGN DECISIONS

If the process of design ended with the completion of the goals, lesson topics, and instructional objectives, most participants in the production process would conclude that the process is a fairly easy one. However, after the basic design elements are established, then they must be implemented in each of the course components. For example, decisions need to be made about the television series treatment: Will the programs have a host? Is the host an academic who presents some content on camera? Or, is the host an actor who serves to introduce topics and becomes a familiar face for students throughout the series? Will the programs use existing films or

will original filming and taping be necessary? Will there be a need for special technical effects such as animation? Are there technical requirements for the programs to meet broadcast specifications and to appeal to a nonstudent viewer audience as well as provide instruction? Will experts appear and be interviewed throughout the series? The answers to each of these and many other questions about the program treatment have instructional as well as programmatic and technical aspects; thus, they involve the producer, the instructional designer, and content advisor. These decisions are also influenced by practical considerations of the course production budget, the production resources available, and the project timeline.

Other important decisions implementing the basic design of the course involve the role and appearance of the study guide in the course. Most research confirms what the Dallas County Community College District has found about the study guide: "Regardless of the quality of the video program or the other print materials, student surveys consistently rank study guides...the most useful single component of telecourses" (Mittelstet, 1979, p. 54). Just as the process of producing telecourses has evolved through the years, so has the role and format of study guides for telecourses. Often each chapter contains the lesson objectives, an overview or summary of the lesson, preview of the television program which matches the lesson, a list of assignments, a list of key words and concepts in the lesson, various kinds of study activities, self-testing materials, and optional assignments or enrichment information. Sometimes the study guides contain additional content as a supplement to the textbook and television programs. Other times, the study guide serves as a book of readings as well as a study guide. Further, the study guide needs to be readable, and its format should be simple and attractive. Thus, establishing the study guide contents and format is an important aspect of the course production process.

Many other decisions need to be made during the course production process. Each course is somewhat unique in this regard, but the following list suggests a few of those decisions:

- What other instructional components are necessary? For example, perhaps a separate book of readings, supplemental audiotapes, or special activities packages for students

are necessary. In a humanities course from the Dallas County Community College District, "In Our Own Image", students use a booklet of high-quality color art prints of masterpieces to augment those original works of art that may be available to them in their particular communities.

- What evaluation instruments will be prepared to go with the course? Commonly, course design includes preparation of a bank of objective test items which are keyed to the instructional objectives for the course. However, essay questions and recommendations for other assignments for students which may become the basis of student grades are also often prepared for instructors.
- What other information and recommendations are needed by the faculty members who will actually implement the course on college campuses once the course is completed and broadcast? Not only do local instructors need to be informed about the reasons behind all academic and design decisions made during course production, but resources such as bibliographies, suggestions for student assignments, and background information about the television series will be a great help to the local instructor.

REFERENCES

Aversa, Frances M., and Forman, David C. Issues in the Evaluation of Educational Television Programs. Lincoln, Nebr.: University of Mid-America, 1976.

Baba, Marietta Lynn; Schermer, Joy; and Shifrin, Norma. "Designing, Producing, and Evaluating an Instructional Telecourse: A Model for Involving the Adult Learner." Journal of Instructional Development 3 (1980): 24-32.

Holmberg, Borje. Status and Trends of Distance Education. New York: Nichols Publishing Co., 1981.

McBride, J. "A Working Model for Instructional Television." Educational Technology, May 1976, pp. 30-34.

Mittelstet, Stephen K. "Telecourse Design, Development, and Evaluation." In Using Mass Media for Learning, edited by Roger Yarrington, pp. 53-61. Washington, D.C.: American Association of Community and Junior Colleges, 1979.

Munshi, Kiki S. Telecourses: Reflections '80. Washington, D.C.: The Corporation for Public Broadcasting, 1980.

Office of College Development. Designing Home Interiors: A Preview. Costa Mesa, Calif.: The Coast Community College District, 1978.

Office of College Development. The Growing Years: A Preview. Costa Mesa, Calif.: The Coast Community College District, 1982.

Pohrte, Theodore W. "Planning and Design Process." Television in Community and Junior Colleges: An Overview and Guidelines. Los Angeles: ERIC Clearinghouse for Junior Colleges, University of California; and Syracuse: ERIC Clearinghouse on Information Resources, Syracuse University, 1980.

Purdy, Leslie. "Design--And How it Works." A Decade of Telecourses, Costa Mesa, Calif.: The Coast Community College District, Office of Community Relations, (1980), pp.15-17.

FACULTY AND TELECOURSES

Faculty play essential roles in the design and development, adoption, and implementation of telecourses. Their involvement is critical and continuous. Consider these facts:

- Every telecourse ever developed by a college or university has had the active participation of one or more faculty members to ensure the accuracy, completeness, and appropriateness of the materials developed to higher education.
- Every telecourse ever adopted by a college or university has undergone the scrutiny and evaluation of a curriculum committee composed of members of the faculty.
- Every telecourse ever offered has had assigned to it a fully qualified (and in most states, credentialed) member of the faculty to ensure the academic integrity of the delivery of the course.

Clearly, faculty provide the academic backbone of telecourses. Telecourses have never been created without faculty, nor could or should they be.

FACULTY ROLE IN IDENTIFYING NEW TELECOURSES

Typically, the decision to design a telecourse is made only after a nationwide survey has been conducted of college administrators and faculty. To justify the commitment of resources to developing a telecourse, the producing institution must be assured that an academically viable course can be created and that faculty at other institutions will be willing to adopt the course into their curriculum.

Input of faculty is obtained indirectly in two basic ways. First, the producing institution reviews course outlines that have been approved by the curriculum committees of a cross-sampling of institutions. Second, widely adopted texts, which indicate faculty acceptance, are collected, reviewed, and analyzed. Direct input in the selection of proposed telecourses occurs when representatives of the producing institution survey faculty members by telephone in a national sampling of colleges and universities that have vigorous distancelearning programs. Additionally, faculty at the producing institution are interviewed to obtain advice and recommendations about telecourses under consideration.

Of course, there are many variables that go into the course identification and selection process. But only when it is clear that an academically sound course can be produced and when it is probable that faculty and curriculum committees will adopt the course is the decision made to produce it.

FACULTY ROLE IN DESIGNING TELECOURSES

After the decision has been made to proceed with the design and development of a telecourse, a design team is formed. The team develops the comprehensive course design plan that will serve as the blueprint for the entire course. At major telecourse-producing institutions, such as The Coast Community Colleges, Dallas County Community College District, and Miami-Dade Community College District, the design team always includes one or more faculty members who have expertise, and classroom experience, in the course subject, an instructional designer, a producer-director, and an editor.

As central members of the design team, faculty make many invaluable contributions. Their participation is complete and continuous. The principal role of the faculty team members is to assist in the design of an integrated learning system that capitalizes on the individual and collective strengths of video and print materials while ensuring the academic integrity and quality of all course materials. To this end, faculty develop course and

lesson objectives. They identify and select a text or textual material. They review and analyze existing visual and print materials that are valid in content, current in treatment, and appropriate for the academic requirements of the course. They develop lesson content outlines and identify what the video and print materials should cover and what new materials must be developed.

The result is a blueprint for course development that, when carefully and conscientiously followed, will result in an academically sound telecourse.

FACULTY ROLE IN THE DEVELOPMENT OF TELECOURSES

The development of each telecourse is unique. Field notes that "it is at the development stage of a course that the role of the faculty member or the division of labor in the development varies greatly from institution to institution" (1979, p. 66). Not only the subject matter, but also the amount of funding, the number of participating institutions and personnel, the time frame, and the conditions under which the design team must operate differ significantly from project to project.

For some telecourses, a single faculty person may be able to handle all the duties related to content accuracy and validity. For example, Dr. Allen Giles, an instructor in music at Golden West College, Huntington Beach, California, served not only as the content specialist for "Beginning Piano--An Adult Approach," but also as the on-camera instructor. He used a combined text-workbook he had previously written for classroom use and, with design and editing assistance, wrote the study guide for the course. Typically, however, there are two or more faculty team members involved in telecourse development.

For national telecourses, the team is usually augmented by a national advisory committee composed of nationally and internationally known scholars, faculty, and academicians. Faculty team members and advisory committees from a sampling of telecourses are cited below.

The Shakespeare Plays. Perhaps no course was ever more thoroughly prepared and scrutinized by faculty than "The Shakespeare Plays," particularly in its first season. "The Shakespeare Plays" National Advisory Committee was established by WNET/Channel 13 (New York), the "origination station" for the BBC/Time-Life series in the United States. Chaired by the eminent Shakespearean scholar, Dr. Maynard Mack, Sterling professor at Yale University, it included eleven other representatives of secondary and postsecondary institutions and of teacher, theatre, and instructional television organizations.

"The Shakespeare Plays" National Advisory Committee included:

Maynard Mack (chairman), sterling professor of English (emeritus) at Yale University; former president of the Shakespeare Association of America, New Haven, Connecticut.

John F. Andrews, editor of the Shakespeare Quarterly, Folger Shakespeare Library, Washington, D.C.

Elizabeth A. Barnes, teacher of speech and drama, Bowie High School, Bowie, Maryland, representing the Secondary School Theatre Association.

Bruno Caliandro, director of the Communications Laboratory, Bank Street College of Education, New York, New York.

Gloria Dati, teacher of English and advanced Shakespeare at Lowell High School, San Francisco, California.

John E. Fiorini, curriculum specialist; chairman of the Eastern Educational Television Network Curriculum Committee, Intermediate Unit No. 17, Williamsport, Pennsylvania.

Jane Anne Hannigan, professor at the School of Library Service, Columbia University, New York, New York; representing the American Association of School Librarians.

Robert E. Knoll, professor of English, University of Nebraska, Lincoln, Nebraska.

Michael Mullin, associate professor of English, University of Illinois, Urbana, Illinois, and director of Shakespeare Film COOP.

Harold L. Steele, president of the Kentucky Parent-Teacher Association, representing the National Parent-Teacher Association.

Gladys Viedemanis, chairman of the English Department, North High School, Oshkosh, Wisconsin; representing the National Council of Teachers of English.

Mary Hunter Wolf, president of the Center for Theatre Techniques in Education, American Shakespeare Theatre, Stratford, Connecticut.

The University Extension Division of the University of California, San Diego, and the Office of College Development at Coastline Community College joined forces to prepare a college-level telecourse that would serve as both a literature and a theatre arts course in Shakespeare at two- and four-year institutions. The National Advisory Committee reviewed course objectives, the study guide format, the essayists chosen to prepare the study guide, test bank items, ancillary instructional materials, and the introduction and headnotes.

The essayists chosen for this initial season were six relatively young but well-established scholars who had demonstrated in their teaching and writing a love for their discipline, a fresh and vibrant approach to the subject matter, and ability to communicate their ideas in writing. The six were: Dr. Janet Adelman, associate professor of English at the University of California, Berkeley; Dr. Martha Andresen-Thom, associate professor of English at Pomona College, California; Dr. Marjorie Garber, associate professor of English at Yale University; and three members of the National Advisory Committee: Drs. John F. Andrews, Robert E. Knoll, and Michael Mullin.

Their manuscripts were presented to the National Advisory Committee for review before final editing and submission to the publisher. Faculty members were thus involved in conceptualizing the telecourse (in the advisory committee), in writing the critical focal essays, in supplying the bibliographies, and in writing test items for the course. They also held final approval power

over the finished product. Later, a number of committee members, including the six essayists, became the instructors-of-record for the course when it was offered by their colleges.

From this deliberate and exhaustive process of group interaction and review by subject matter experts and specialists in the fields of instructional design, publications, and television production comes a thoroughly researched course that meets national standards for subject matter treatment, for broadcast quality, and for publications marketability.

Project: Universe, a 39-program, 13-week telecourse in elementary astronomy, had two principal faculty advisors who participated in the design and development of the course: Steve Lattanzio, assistant professor of astronomy and planetarium director at Orange Coast College, and David Pierce, professor of astronomy at El Camino College and consultant in astronomy for the Jet Propulsion Laboratory in Pasadena. Additional academic expertise was brought to the telecourse by Dr. Edward Krupp, series host and director of the Griffith Observatory in Los Angeles, California.

Introducing Biology provided an example of a telecourse that was a tour de force of two gifted faculty members: Lloyd Mason Smith and Bonita L. Roohk. Lloyd Smith, an instructor in biology and natural history at Orange Coast College since 1956 and a member of the National Teacher's Hall of Fame, and Bonita L. Roohk, instructor in biology at Golden West College and named one of the "Outstanding Educators in America" (1975), served as academic consultants to the course, authored the course text, reviewed and wrote scripts for the lessons, and acted as on-camera instructors.

The American Short Story. The University of California, Los Angeles Extension participated with The Coast Community Colleges in developing the telecourse based on the American Short Story film series. Academic advisor and editor for all print materials developed for the course was Dr. Robert A. Rees, director of the Department of the Arts, UCLA Extension. Dr. Rees was responsible for the academic integrity of the content of all instructional print materials for the course and ensured that all materials met established criteria for academic excellence.

Five other academic specialists in English and American literature contributed to the writing of the lessons. These contributing writers were Ann M. Hostetler, instructor of English at the Humanities Institute at Golden West College, Huntington Beach, California; M.K. Jackson, formerly instructor in literature, composition, and grammar in the North Orange County Community College District, Fullerton, California; Karen Mack, English lecturer and instructor at the University of California, Los Angeles, and at Pepperdine University, Los Angeles, California; Kathleen McGuire, professional author and nonfiction ghostwriter and teacher of English and literature at the Southern California Colleges; and Richard T. Searles, professional writer and former instructor in English.

FACULTY ROLE ON TELECOURSE PRINT PRODUCTION TEAM

Once the basic blueprint for the telecourse is established, the design team members begin developing materials and actually producing the course. For faculty team members this can typically mean a variety of tasks such as:

- Writing and reviewing supportive print materials that will supplement video and text, and ensuring the relevance of all print materials to the instructional objectives and course goals.
- Writing and reviewing study guide chapters that will lead the student viewer through a carefully designed sequence of study from learning objectives to text to video to quizzes, projects, and examinations.
- Writing and reviewing material for the faculty manual, including suggested strategies for teaching the course and a complete set of test questions (objective and essay) and answers that are based directly upon the instructional objectives of each lesson in the telecourse.

- Reviewing all print materials to ensure that they are accurate, complete, and appropriate to the course goals and the demands of higher education.

FACULTY ROLE ON THE TELEVISION PRODUCTION TEAM

As members of the television production team, faculty members perform a number of duties related to ensuring the academic integrity of the telecourse. Duties include:

- Identifying appropriate visual treatments of the subject matter.
- Specifying content to be included in the lessons.
- Reviewing and editing scripts for academic validity.
- Assessing and identifying visual materials (films, videotapes) that already exist and are appropriate for the telecourse.
- Ensuring that each lesson is accurate, complete, and is relevant to the course goals.

FACULTY ROLE IN VALIDATING TELECOURSES

Throughout the telecourse production process all team members are responsible for ensuring that each course component will help students achieve instructional objectives and that each component complements other components. Faculty team members check the accuracy and fidelity of the contents of course components to course goals and the instructional objectives. Faculty members verify that information and skills specified in the course design are found within the video and print components.

Finally, faculty members reviewed the test bank for accuracy. Test items are compared to the information presented in the lessons. The items are evaluated and revised, as necessary, based on the academic standards, integrity, and professional experience of the faculty team members.

FACULTY ROLE IN ADOPTING TELECOURSES

Before any course can be offered at a college or university, it must be reviewed and approved by a curriculum committee which usually consists of faculty members. Because of the high visibility of telecourses to the public, telecourses often undergo an even more stringent scrutiny than on-campus courses. (This process is described in another section of this sourcebook.)

ROLE OF FACULTY IN OFFERING TELECOURSES

Research indicates that teacher attitudes are often modeled by their students; further, student attitudes affect student learning. Thus, a positive attitude exhibited by a teacher toward television instruction is especially beneficial. Wood and Wylie agree: "...Teachers who are enthusiastic about TV find that students like TV instruction; teachers who are negative about the medium tend to find their students do not like television" (Wood and Wylie, 1977, p. 331).

According to a recent CPB survey, postsecondary institutions across the country consider faculty the key to success with television courses. ("Tele:Visions," 1980, p. 2). The duties of a faculty member in offering a telecourse are different, but no less demanding or critical than those of an instructor offering the same course in an on-campus setting. Duties include becoming familiar with each component of the course, making local adaptations of print materials, developing ancillary activities, preparing and evaluating quizzes and tests, preparing student orientation materials, holding office hours for face-to-face and telephone discussions, conducting discussion groups and review sessions, assigning grades, and following institutional policies and guidelines. In summary, the role of faculty in offering telecourses is "...a vital role. But it is quite different from that of the classroom teacher. It is not a role with which all faculty will feel comfortable but one which can be challenging and exciting for a creative teacher" (Field, p. 68).

Together, faculty who participate in the design of the telecourses and faculty who offer them comprise strong teams that ensure the accuracy, completeness, and academic integrity of telecourses.

REFERENCES

Field, Hyman H. "Role of the Faculty in Mass Media Courses." In Using Mass Media for Learning, edited by Roger Yarrington. pp. 63-68. Washington, D.C.: American Association of Community and Junior Colleges, 1979.

ITV Center. "Tele:Visions," a newsletter produced by the Instructional Television Center of the Dallas County Community College District. Vol. 2, no. 1 (March/April, 1980).

Wood, Donald N. and Wylie, Donald G. Educational Telecommunications. Belmont, Calif.: Wadsworth Publishing Company, Inc., 1977.

LEARNING THROUGH TELECOURSES (EVALUATING THE OUTCOMES)

Since the mid-1950s there have been hundreds of experimental research studies to determine the answer to the simple question "can students learn from televised instruction?" Today, there is incontrovertible evidence that indeed students do learn from instructional television: when normative measurements are used, they show that students learn as well as their classroom counterparts; when criterion-based measurements are used, they show that students consistently achieve pre-specified learning objectives and course goals. Few, if any, of these studies would have included telecourses designed according to principles now in wide use. It is theorized that research on these newer courses may show significant differences that favor the telecourse student.

All research authorities who have undertaken the task of analyzing the results of hundreds of research experiments concerning learning by television agree (Stickell, 1963; Asheim, 1965; Chu and Schramm, 1967; Reid and MacLennan, 1967; Dubins and Traveggia, 1968) that in the great majority of comparative studies there is no significant difference between learning from traditional teaching methods and learning from instructional television. And, when a significant difference occurs, it is more likely to favor instructional television than traditional delivery methods.

The research literature consists largely of two types of studies. The first are summaries of the research. These studies analyze and make conclusions about great numbers of research experiments conducted to test various hypotheses about learning by television. The second are the research experiments particularly relevant to broadcast telecourses (which include a delivery system consisting of television programs, text, study guide, quizzes, and tests).

Since few courses have criterion-based measurements that are agreed upon by all the experts in the given field, most research experiments involve a comparison of learning by television with learning in the classroom. These studies typically assume that sufficient learning takes place in the classroom and seek to evaluate how well learning by television compares to that norm.

SUMMARIES OF THE RESEARCH

Starting with the earliest one, major summaries of research concerning learning by television are cited below, along with their conclusions.

Stickell (1963) made a study of approximately 250 research experiments comparing learning by television with classroom-based instruction. He classified these studies on the basis of how well they met the most rigorous experimental research design criteria. Of the 250 studies, he found 217 to be "uninterpretable," twenty-three to be "partially interpretable," and ten "fully interpretable." He observed that of the ten that were fully interpretable, none showed any significant difference in teaching effectiveness. Later researchers (Chu and Schramm, 1967) observed that all experiments judged by Stickell, even those not judged as "fully interpretable," supported the same conclusions as those that were "fully interpretable."

Asheim and others (1965) evaluated thirty-two research experiments that compared college-level instructional television to traditional delivery methods. Twenty-one of the studies showed no significant difference, ten favored instructional television, and one favored traditional instructional methods.

Chu and Schramm (1967), in what is now a classic report on the subject of learning from television, analyzed, in depth, 207 studies that measured how well students learn by television. From these studies they made 421 separate comparisons between learning from television and classroom-based methods. Three hundred eight of the research comparisons showed no significant differences, sixty-three favored instruction by television, and fifty favored traditional teaching methods.

Chu and Schramm made 235 comparisons of televised instruction at the college and adult level. One hundred seventy-six of the studies showed no significant differences between the learning effectiveness of televised and conventional instruction. The remaining studies were evenly divided between those that favored conventional methods and those that favored televised instruction.

In addition to the statistical analyses, Chu and Schramm drew the following following conclusions:

> So far as we can tell from available research evidence, there is no general area where television cannot be used efficiently to teach the students (p. 10).
>
> Television is most effective as a tool for learning when used in a suitable context of learning activities at the receiving end...Almost invariably, where it is being used effectively, it is built into a teaching-learning system (p. 13).
>
> Television is more likely to be an efficient tool of learning if it is planned and organized efficiently... What is noteworthy is the finding that the students learn more when the visual manipulation is carefully planned by both the television team and the studio teacher (pp. 19, 27).
>
> If saving time is important, a television program can probably be shortened and still achieve the minimum requirement of teaching (p. 35).
>
> Learning from television by the students does not seem necessarily to be handicapped by the lack of prompt feedback to the instructor (p. 49).

Reid and MacLennan (1967) studied 333 experimental research studies comparing how well students learn by television. They conclude:

> The vast majority of these studies has revealed 'no significant differences' in measured performance between students who were instructed via television and those who were taught directly. A few studies have shown differences in favor of television, and a few others have found differences in the opposite direction. In some instances differences that were found on immediate tests of learning disappeared when students were retested after a delay of a few days or weeks.

Dubins and Traveggia (1968) published a comprehensive review of research comparing college teaching methods spanning forty years. While this review dealt with far more than learning by television, the reviewers presented data that clearly supported the conclusion that virtually all instructional methods produce roughly similar results when student grades are used as a criterion.

Dubins and others (1969) analyzed hundreds of research experiments comparing television and classroom instruction. Using strict experimental design criteria, they identified forty-five experiments that involved semester-length courses. The selected courses used the same examinations in the television and classroom groups. Using standard t-ratios to compare the learning performance of the two groups, the researchers concluded that there were no significant differences between learning by television and in learning face-to-face.

RESEARCH ON LEARNING FROM BROADCAST TELECOURSES

Since broadcast television courses first came on the scene in the 1950s, they have been the constant subject of research experiments and studies. Research has been conducted by concerned administrators and faculty to assure that students who successfully complete telecourses learn as well, and as much, as their classroom counterparts. The results of the research undeniably support the conclusion that students do learn from broadcast television courses and they learn well.

The research experiments and studies cited below were conducted on the subject of learning from telecourses, not necessarily on telecourses that fit the current definition. As defined here, a telecourse is a course offered for college credit that includes broadcast television programs, a text, student study guide or syllabus, and other ancillary study materials provided by a faculty member, as well as interim examinations.

Erickson and Chausow (1960) conducted a three-year research experiment at the City Colleges of Chicago. Achievement of television-at-home groups was measured against that of traditional, classroom groups. Both groups had the same faculty person, and both groups were given the same examinations. Experimentation showed that the television groups did at least as well and sometimes significantly better than classroom groups. The results remained the same when the groups were equated as much as possible in age and initial ability and when they were not. Overall, the researchers found "no significant differences" between learning on-campus and learning by television. Also, they observed that "the at-home television student, who is typically a highly motivated, mature adult, tends to out-perform his counterpart ir age and ability taking evening courses on campus."

The Chicago study reached this conclusion:

> When evaluated by the techniques of measurement and analysis used in the experiment, television instruction is a thoroughly effective means of extending college opportunities to at-home students in all the subject areas explored in the experiment.

In 1972 a comparison of grades was made between 8,000 television students enrolled in telecourses in twenty community colleges in Southern California and on-campus students enrolled in the same courses. No significant differences between on-campus and telecourse students were observed (Gross, 1972).

Purdy and Icenogle (1972) conducted a nationwide research study involving forty-one two-year colleges and fifty-five four-year colleges and universities. The goal of the research project was to evaluate the effectiveness of the "Classic Theatre" telecourse. Their report made these conclusions:

> Faculty and administrators at local institutions gave a positive evaluation of the Classic Theatre course. The Classic Theatre textbooks, specially prepared for the course, were generally found to be helpful and well integrated. They were occassionally criticized by two-year college faculty for being too demanding of introductory-level students...

> The evidence offered in this report suggests that the medium of television can effectively add a new dimension to at least certain kinds of learning, and at the same time can make that learning available to increasing numbers of individuals who yearn for it.

In 1976 researchers at the Dallas County Community Colleges evaluated the learning effectiveness of the English 101 telecourse "Writing for a Reason." Classroom students enrolled in English 101 served as the control group. Following are the findings of that research experiment:

> Both telecourse and control group students improved their scores on the composition from the beginning to the end of the semester. Statistically significant improvements occurred in all eight areas on which the compositions were rated for both groups of students.
>
> The students in the telecourse obtained statistically significant higher scores than the control group students in three areas: organization of the entire paper, organization of individual paragraphs, and 'holistic' or overall quality of the paper. In the other categories (spelling and mechanics, diction, usage, and sentences) no significant differences between the two groups were encountered.
>
> When the distributions of final course grades of all students enrolled in the English 101 telecourse and on campus English 101 sections were compared, it was found that the telecourse students achieved similar grades: the average grade of the telecourse students was 2.8; the mean grade of the on-campus students was 2.7 on a four-point scale.

In 1976 researchers at the Dallas County Community Colleges conducted an elaborate evaluative study of the introduction to business telecourse "It's Everybody's Business." One of the purposes of the study was to investigate achievement of students enrolled in the telecourse compared to similar aspects of students enrolled in on-campus sections of introduction to business.

Both groups were found to have successfully mastered pre-specified learning objectives, as measured on an achievement test. However, the researchers noted that the television group attained a higher mean score on the achievement test. The study concluded that since the telecourse was instructionally effective, it is a viable alternative learning system.

In 1977 researchers at the Dallas County Community Colleges made an evaluation of the Psychology 105 telecourse "As Man Behaves," which was developed and produced by The Coast Community Colleges. In order to measure learning achievement by television and on-campus students enrolled in Psychology 105, the researchers administered and a pre-test and a post-test based on objectives of the course. A t-test for related measures was used to determine if either group made a significant gain in achievement between the pre-test and post-test. The study observed and concluded that both the telecourse students and on-campus students made significant gains in achievement scores as a result of instruction. And, there was no significant difference in the post-test achievement scores between the telecourse and on-campus sections.

In 1977 researchers evaluated the learning effectiveness of the History 101 telecourse "The American Story, Beginnings to 1877" offered by the Dallas County Community Colleges. Both telecourse and on-campus students were given a criterion-based pre-test and a post-test developed from the objectives of the course. To determine whether differences in post-test achievement could be observed between on-campus and telecourse groups, a statistical procedure of analysis of covariance was used. This procedure took into consideration the differences in pre-test scores in equating the two groups. The results of the analysis showed that both the telecourse students and the on-campus students made significant improvement in achievement scores. And, the telecourse students made significantly greater gains in pre-test versus post-test achievement than did on-campus students.

In 1977 researchers at the Dallas County Community Colleges compared the grade records of those students who took the first course of a two-course sequence by television and the second course on-campus with those students

who took both courses on-campus. Courses involved in the study were American government and freshman English. In both studies, it was found that telecourse students out-performed by a slim margin the on-campus students.

Psychology 201 was the subject of a research study conducted by the Dallas County Community Colleges in 1978. The summary concluded:

> An investigation of comparative telecourse and on-campus Psychology 201 grades revealed that with the exception of the "W" (withdrawal) grade category, the grade distribution of television and on-campus Psychology 201 students were quite similar.

In the fall semester of 1979, telecourse students enrolled at The Coast Community Colleges in the introductory astronomy course "Project: Universe" were compared to classroom counterparts by Steve Lattanzio, astronomy instructor. He administered the same exam to both groups. Lattanzio concluded, "The results were that mastery was roughly comparable between campus and telecourse (students)." In the summer of 1979, Lattanzio had made a similar study comparing the performance of students in his on-campus class to that of telecourse students. He concluded, "...their average scores were nearly identical...it convinced me that there were no serious differences in the amount of material learned by each group..." "Project: Universe" was produced by the Coast Community Colleges and the Southern California Consortium for Community College Television. Lattanzio co-authored the study guide for "Project: Universe" and served as faculty advisor on the design team during development and production of the course.

In 1976, 1978, and 1980 Coastline Community College telecourse students were surveyed and asked to compare television courses with on-campus courses. All three studies indicated that the majority of the students felt that telecourses are comparable, if not better, than on-campus courses.

In 1980 George R. Mount and Sharon R. Walters of Mountain View College reported on their research of traditional versus televised instructional methods for introductory psychology. The telecourse used in the study was

The Coast Community Colleges course "As Man Behaves." The two researchers reported the following:

> This study compared the performance of students in a televised introductory psychology course to that of students in a traditional introductory psychology course at a community college. All students had the same instructor and textbook. They took approximately the same tests. Students in the televised introductory course did significantly better than those in the traditional introductory course. These two groups were also compared on the basis of age, sex, and scores on the Sixteen Personality Factors Inventory. Students in the televised psychology course were more happy-go-lucky, conscientious, trusting, astute, controlled and less apprehensive.

In 1981 Dr. Elizabeth Ritchey published her findings in a research experiment conducted at Virginia Polytechnic Institute and State University concerning teaching health science by television. The abstract of her report, published in Educational Technology Systems, states the following:

> In order to justify teaching college-level personal health courses by methods other than the traditional lecture format, assessment of attitude change to ten selected health behaviors was undertaken. Methods compared included lecture, television-taught classes, and self-instruction using mostly television. Following ten weeks of instruction, it was found that the self-instructed method produced the most favorable change in attitudes toward behaviors generally considered conducive to good health.

Professor Gordon Contor, University of Iowa, teaches classroom and telecourse sections of a child development course. He observes, "I send essay material to supplement the television material, and students call for discussion. Average test scores are identical for both sets of students."

Dr. Jack Byerly, instructor with The Coast Community Colleges, analyzed student evaluations of telecourses offered in 1981. Students were asked to compare telecourse workloads with conventional courses at the college level.

He reports that this question was asked to help analyze objectively a conception held by some that telecourses are not valid for the academic curriculum because too little course content is involved. Fifty-six percent of the respondents felt telecourses were about the same as on-campus courses. Twenty percent felt more work was required in telecourses than for most three-unit conventional courses at the community college level.

REFERENCES

Byerly, J. "Investigation of Factors That Condition Student Enrollment in Broadcast Courses at Coastline Community College." Dissertation, Pepperdine University, 1982.

Chu, Godwin C., and Schramm, Wilbur. Learning from Television: What the Research Says. Stanford, Calif.: Stanford University, Institute for Communication Research, 1967. ERIC Document Reproduction Service ED 014 900.

Dissertation Abstracts International, 1980, 41 (6), 2342A. University Microfilm's Number 8026374.

Dubin, R., and Traveggia, T. C. The Teaching Learning A Paradox: A Comparative Analysis of College Teaching Methods. Eugene, Oreg.: University of Oregon, Center for the Advanced Studies of Educational Administration, 1968.

Erickson, C. G., and Chausow, H. M. Chicago's TV College: Final Report of a Three Year Experiment. Chicago: Chicago City June College, 1960.

Gross, L. S. A Study of Two College Credit Courses Offered over Television by the Southern California Consortium for Community College Television. U.S., ERIC Document ED 011 003, 1972.

ITV Close-up: The First Six Years. Dallas: Dallas County Community College District, 1978.

Lattanzio, Stephen P. Costa Mesa, California. Personal letters and evaluation data, 1979, 1980.

Mount, George R., and Walters, Sharon R. "Traditional versus Televised Instructional Methods for Introductory Psychology." Journal of Educational Technology Systems 9, no. 1 (1980-1981).

Office of College Development. Coordinated Instruction System Student Survey: Coastline Community College. Costa Mesa, Calif.: The Coast Community Colleges, 1981.

Office of Resource Development, Research Department. Evaluation of Psychology 201 Telecourse. Dallas: Dallas County Community College District, 1978.

Office of Special Services. Evaluation of the Psychology 105 Telecourse "As Man Behaves." Dallas: Dallas County Community College District, 1976.

Office of Special Services. Evaluation of the Psychology 105 Telecourse "As Man Behaves." Dallas: Dallas County Community College District, 1977.

Office of Special Services. History 101 Telecourse Evaluation "The American Story, Beginnings to 1877." Dallas: Dallas County Community College District, 1977.

Office of Special Services. Summary of the Evaluation of English 101 Telecourse "Writing for a Reason." Dallas: Dallas County Community College District, 1976.

O'Rourke, J. S, IV. "The Introduction of Videotaped Instructional Material into the Curriculum of the United States Air Force Air Command and Staff College Associate Seminar Program: A Comparison of Education Strategies." Doctoral dissertation, Syracuse University, 1980.

Purdy, Leslie, and Icenogle, Danell. Classic Theatre--The Humanities in Drama: A Television Course for Credit: Final Research Project. National Endowment for the Humanities, 1976.

Reid, J. C., and MacLennan, D. W. Survey of Research in Instructional Television and Film. Washington, D.C.: U.S. Government Printing Office, 1967.

Ritchey, E. A. "Change in Attitude to Help Behaviors through Teaching with Television." Journal of Educational Technology Systems 9, no. 2 (1981).

Smith, R. B. "The Effects of Computer Assisted Feedback on Student Performance in a Televised College Course." Dissertation, United States International University, San Diego, 1975.

Stickell, D. D. "A Critical Review of the Methodology and Results of Research Comparing Televised and Face-to-Face Instruction." Doctoral dissertation, The Pennsylvania State University, 1963.

THE ACADEMIC SOUNDNESS OF TELECOURSES

Today's telecourse is demanding academically, yet sophisticated and professional in approach, content, and use of the television medium. A far cry from the "televised instruction" delivered to students in the 1950s and 1960s, telecourses must often not only satisfy the student's need to learn but also must appeal to great audiences of viewers. Many of the best telecourses being produced today are offered nationally by colleges and universities that adopt them on the basis of their academic soundness and integrity; yet, when broadcast, these courses frequently must also compete with network programs. Pool (1982) and Zigerell (1980) have remarked on the duality of the role of telecourses in broadcast delivery: telecourses must entertain as well as educate.

For example, according to research by the Nielsen Company and the Public Broadcasting Service (PBS), the telecourse "Understanding Human Behavior" (UHB) attracted at least 750,000 viewers during broadcasts of the series by PBS in the fall and spring months of 1981-82 (Brock, 1982). At the same time, more than 500 colleges and universities were offering the course for college credit. One program in the UHB series was described by Time ("PBS and College Education," 1981) as

> ...literally a cliffhanger: a man uses his tactile sense to claw his way to safety while climbing. Afterward, diagrams with flashing electronic lines show how impulses speed along the nerve path from finger to brain (p. 46).

In 1980, Ohio State University recognized the academic and technical excellence of the telecourse "Introducing Biology," declaring that the course "epitomizes what ITV (instructional television) can be." In 1979, the biology telecourse had been awarded an "Emmy" by the Hollywood Academy of Arts and Sciences for instructional excellence. Both of these telecourses are college-level courses produced in the studios of KOCE-TV, Channel 50, Huntington Beach, California, a PBS-affiliate station wholly owned by the Coast Community College District

(often also referred to as "Coast," or "The Coast Community Colleges"). Both are currently offered by many colleges and universities in the United States and Canada.

"Understanding Human Behavior," an introductory-level course designed to satisfy requirements for the psychology major, was one of nine leading college-level telecourses chosen for broadcast by PBS as part of a new national service for adult learners. With Coast as lead designer and producer, the course was produced jointly in 1980 with the City Colleges of Chicago, the Dallas County Community College District, the Miami-Dade Community College District, the State of Florida Department of Education, the Southern California Consortium for Community Television, and the University of Mid-America. "Introducing Biology" is a thirty-six lesson course designed and produced solely by Coast as a nonlab course for nonmajors.

COMPARING THE OLD AND NEW TELECOURSES

Zigerell (1979) has compared the quality and appeal of the well-designed, professionally produced telecourses now being developed by The Coast Community Colleges and other leading producers to the televised lectures and "blackboard aids" which commonly characterized instructional television of the late 1960s and early 1970s. Mentioning Coast's "As Man Behaves" (psychology) and "In Our Own Image," a humanities telecourse produced by the Dallas County Community College District, Zigerell notes that these series have "demonstrated beyond doubt that the TV medium, intelligently and sensitively handled, can indeed combine instruction and entertainment" (p. 1).

Recently, a growing number of other leading educators and media specialists have commented on the sophistication and academic excellence of the newer telecourses. In the television program "Learning by Viewing" (1982), Bryant describes these telecourses as "sophisticated" learning systems "in which academic and media specialists provide quality materials..." Beaty ("Learning by Viewing") adds that today's telecourses are "in many ways more demanding than regular campus-based courses."

THE WIDE ACCEPTANCE OF COAST TELECOURSES

Since 1974, The Coast Community Colleges has produced or developed and distributed twenty-seven telecourses which represent such diverse academic disciplines as astronomy, literature, humanities, psychology, and marine science. Some of these courses were developed and produced wholly by Coast; some were developed around excellent series of television programs or films produced elsewhere and broadcast nationally by PBS; others of major scope and budget, such as "Understanding Human Behavior," are developed in cooperation with other major producers and users of college-level television courses. Telecourses are leased to other institutions of higher learning through Coast Telecourses, the marketing and distributing division of the Coast Community College District.

More than 930 colleges and universities in the United States and Canada have adopted into their curricula one or more of these telecourses developed or produced by Coast or marketed by Coast Telecourses. These institutions include not only two-year colleges but four-year colleges and universities and their graduate schools, as well. Both public and private, they represent a total enrollment of more than four million students and are located in all fifty states--from the coldest reaches of Alaska to the warm heart of Hawaii (Records of Coast Telecourses, 1982).

"The Growing Years," a major telecourse produced at KOCE-TV, with Coast as lead designer and producer, has been offered by more than 500 two- and four-year colleges and universities. Moreover, over ninety percent of these schools renewed leases permitting them to continue offering the course for more than one or two semesters (Records of Coast Telecourses). Originally designed for three units of lower-division college credit, "The Growing Years" has been accorded upper-division credit by a faculty committee of the California State Universities (CSU) and has been used at the graduate level for training of medical students and para-professionals by such respected institutions as the Universities of Wisconsin, South Carolina and Eastern Kentucky; Harvard; and the City University of New York (Harris, 1982).

A course in child development, "The Growing Years" includes not only television programs but also a leading national text and a study guide published by the McGraw-Hill Book Company. The course is a joint production of The Coast Community Colleges and the University of California, San Diego, in association with McGraw-Hill, Inc. Dr. Diane Papalia, of the University of Wisconsin, wrote the text and served the telecourse in the vital role of content advisor. Portions of the "Introducing Biology" telecourse have been used in courses for nonmajors at the Massachusetts Institute of Technology and at Harvard and Stanford Universities (Records of Coast Telecourses).

The wide acceptance of such telecourses by so many other institutions of higher learning testifies to the academic soundness and excellent technical quality of Coast Telecourses. Just as with regular campus courses, each college and university *makes its own individual decision about offering telecourses*, and individual telecourses are adopted into the curriculum *only after they have been judged by faculty to be academically sound and worthy of college-level credit*. The importance of this process has been described and stressed by Willey (1982), Wyman (1982), and many other educators whose institutions have long offered telecourses in their curricula. (The process is described more specifically and completely at the end of this article.)

ACADEMIC AND PRODUCTION HONORS FOR TELECOURSES

At least six telecourses in which Coast has participated have earned honors for academic and technical excellence. As noted earlier, "Introducing Biology" was awarded an Emmy as "best formal television series" produced during 1979. In 1980, both the biology course and the telecourse "Humanities Through the Arts," which was produced by Coast and the City Colleges of Chicago), won the prestigious Ohio State University award. In honoring the biology course, judges stressed both the quality of production and the teaching potential: "...the combination of the videotape teachers and material, along with the text and workbook for home study, should make a very effective learning program for the serious student." The citation for "Humanities" reads: "...ideas

and concepts are illustrated to effectively enhance learning." The judges also noted that the series host, Maya Angelou, had "...(brought) the diverse elements together to a solid, concise lesson."

"Oceanus: The Marine Environment" also won an Emmy in 1980 for "best series in the instructional programs" category. "Oceanus" was produced by the Southern California Consortium for Community College Television, which includes The Coast Community Colleges. "American Government," in which The Coast Community Colleges was a partner with the Dallas County Community College District, has earned the coveted Silver Award from the International Film and TV Festival of New York. Filmmakers from thirty-four countries competed for the award, which is made for "technical excellence in filmmaking." A fifth telecourse, "Beginning Piano: An Adult Approach," designed and produced by Coast, was recognized by the West Coast Chapter of Sigma Alpha Iota, an international music fraternity, for "noteworthy achievement in the field of serious music..." The fraternity awarded "Beginning Piano" its Annual Television Award. "Cosmos" this year became the sixth telecourse to be honored, winning the Ohio State Award for excellence in the natural and physical sciences category. "Cosmos" originated as a series produced by KCET-TV, Los Angeles, and Carl Sagan Productions. Coast District, in cooperation with the University of California, San Diego, developed materials for a three-credit telecourse.

MAJOR USERS OF COAST TELECOURSES

As noted earlier, many institutions lease and offer Coast telecourses. These clients include such major groups as the United States Air Force, the largest community college system in the United States; other large producers of telecourses; regional and national consortia (described later in this sourcebook); and the University of California (UC) and CSU systems, as well as numbers of individual colleges and universities that do not join consortia.

Military personnel serving at Norton Air Force Base, San Bernardino, California, and Dover Air Force Base, Dover, Delaware, can work toward--and obtain--either A.A. degrees or transfer credit through self-paced, independent study programs established and coordinated by Coastline Community College. Students at these bases can enroll in any of five terms offered each year and can choose from twenty different courses in general education and business which are approved by the Community College of the Air Force and accepted for degree purposes by most colleges and universities throughout the country (Records of the Office of Instruction, 1982). Each of these courses includes television programs, audiocassettes, textbooks, study guides, computer-analyzed tests, and student-teacher interaction. Through direct telephone line and by mail, military students take advantage of the same extensive support system offered by Coastline to all independent study students.

THE PROCESS OF ADOPTION

As noted earlier, every college and university makes its own decisions about courses to be included in the curriculum through processes that may differ somewhat but have much in common. That the decision process is both informed and rigorous is emphasized by Robert Wyman, dean of instruction and president, Television Consortium of Valley Colleges, Sacramento; by George A. Willey, director of the Bay Area Community College Television Consortium, San Francisco; and by the members of the Non-Traditional Instruction Committee of the Los Angeles Community College District. All of these organizations lease and offer telecourses distributed by Coast Telecourses.

Dr. Wyman (1982) describes the policy of the Valley Consortium and its nine colleges:

> ...we have spent a great deal of time discussing how courses offered through television are identified and processed through the curriculum procedure at a given college. All of the colleges in the Valley Consortium work with faculty and the curriculum processes as

> determined by each campus...If classes do not meet the standards of the faculty and college, they are not offered by any of the colleges in the Valley Consortium (p. 1).

The Los Angeles Community College District offers telecourses to 15,000 students, more than any other district in the state of California. Potential courses for this district must be evaluated by the Non-Traditional Instruction Committee, which is composed of faculty representatives from each of the district's ten colleges (members of the Non-Traditional Instruction Committee, 1982). Faculty senates of the colleges choose their own committee representatives. In turn, the committee

> "...convene(s) subcommittees of faculty members expert in the discipline of each course who determine the number of units to be granted upon successful completion of the course, and who select the equivalencies to be provided and the course's place in the curriculum... The same faculty committee prescribes the minimum standards to be observed by the instructor of the course in terms of print material, course content and assignments...(p. 1).

Before acquiring a telecourse, the Dallas County Community College District's Instructional Television Center (ITV) considers information from student and faculty surveys, national studies by other producers and users, and input from the vice-president of instruction for each of the seven colleges in the district. To evaluate the potential course, a fourteen-member faculty committee is drawn from the appropriate discipline and the division chair in each college. Each telecourse is then evaluated on the basis of "compatibility or adaptability of objectives, academic soundness, and production quality of television, audio, and print elements" (ITV Center, p. 13). Like Coast, Dallas is a major user, as well as producer, of telecourses.

The Southern California Consortium, whose thirty-five colleges and universities are organized both to produce and offer telecourses, submits new courses to a "double" approval process: the proposed course must be accepted by both the consortium and by each member college interested in offering the course. First, a curriculum committee representing member colleges reviews the course materials. If the course does not meet quality standards or transfer

requirements, it is rejected without further consideration. A course that does meet committee standards is submitted to discipline specialists, who then recommend to the Executive Committee of the Consortium that the course be (1) rejected, (2) given trial approval for one semester, or (3) included in the list of approved courses. However, courses that survive this stage must still be reviewed and accepted or rejected by each member college of the Consortium.

The consortium's search for "quality courseware" emphasizes the following points: (1) the course must be academically sound; (2) the course should be designed as a total learning system, integrating the elements of print and video in a manner which utilizes the advantages each offers; (3) the television portion must be of high production quality; (4) the course must be relevant to the student population, either meeting general education requirements or an identified area of need; (5) a variety of academic areas should be represented in each semester's offerings (The Southern California Consortium for Community College Television, p. 7).

Coastline Community College, through which all telecourses used by Coast District are offered, submits both the district's own telecourses and those produced elsewhere to a process quite typical of those described above. New courses are adopted or rejected on the basis of scrutiny by research, screening, and curriculum committees. Faculty representatives of the disciplines involved are assigned to evaluate each course and communicate their evaluations to the curriculum committee.

During the decision process, curriculum committees customarily examine materials that include course outlines, descriptions of lesson plans and content, videotapes of programs, text and study guide chapters, test instruments, and supplementary learning activities suggested for students. To all colleges and universities interested in offering telecourses, Coast Telecourses furnishes a special handbook for administrators and faculty and personal consultation services, as well as the customary review materials.

Beaty, Sally; Bryant, Larry; and Pool, Rodger H. In "Learning by Viewing." Videotape. Fund for the Improvement of Postsecondary Education (FIPSE). Produced by WETA-TV, Washington, D.C., 1982.

Brock, Dee. "Adult Learning Through Television: The Forging of a new Partnership." T.H.E. Journal, 7 (November 1980):44-45.

Brock, Dee. "PTV-3 Update." Address before the National Telecourse Conference 1982: "Managing Technology for Adult Learners." Dallas, Texas, April 30, 1982.

Harris, Chip. Director of Marketing and Distribution. Memorandum to Norman E. Watson, Chancellor, The Coast Community College District, Costa Mesa, Calif.: April 20, 1982.

ITV Center. "ITV Close-up: The First Six Years." Dallas: The Dallas County Community College District, 1978.

Members of the Non-Traditional Instruction Committee of the Los Angeles Community College District. Letter to Deans and Chairpersons, University of California Campuses, California State University and College Campuses, Private California Universities and Colleges. April 28, 1982.

"PBS and College Education." Time, 5 October 1981, p. 46.

Records of Coast Telecourses. The Coast Community College District. Costa Mesa, Calif.: 1982.

Records of the Office of Instruction. Coastline Community College. Fountain Valley, Calif.: 1982.

Southern California Consortium for Community College Television. "A Second Decade." Cypress, Calif.: pp. 1-15.

Willey, George A. Director, Bay Area Community College Television Consortium. Letter To Mary Lou Zoglin, Associate Dean, Alternative Learning Systems, Coastline Community College, Fountain Valley, Calif. May 14, 1982.

Wyman, Robert. Dean of Instruction and President, Television Consortium of Valley Colleges, Sacramento, Calif. Letter to Whom It May Concern, May 12, 1982.

Zigerell, James J. "A Brief Historical Survey." Using Mass Media for Learning. American Association of Community and Junior Colleges: Washington, D.C., 1979, pp. 1-12.

Zigerell, James J. "Current Development in Telecommunications in Two-Year Postsecondary Institutions in the United States." Television in Community and Junior Colleges: An Overview and Guidelines. Los Angeles: ERIC Clearinghouse for Junior Colleges, University of California; and Syracuse: ERIC Clearinghouse on Information Resources, Syracuse University, 1980.

BRINGING THE STUDENT AND THE TELECOURSE TOGETHER

The refinement and development of the telecourse as a sophisticated but flexible learning system of many resources is placing great emphasis on the process of implementation. There is growing recognition that the key to a successful learning experience can often be the way the course is applied, how the instructor molds the various elements to fit the special needs of students enrolling in the course.

Typically, colleges and universities that offer telecourses to their students implement the courses on campus through either the appropriate academic department or division, a special telecourse administrative unit, or a cooperative arrangement between the two. Colleges with large numbers of telecourse students and extensive support services are more likely to have a special unit, while institutions with small programs may assign total responsibility to one department or instructor. If more than one unit of the college is involved, the division of labor is usually made on an instruction-student support basis, with the academic department responsible for instruction and the telecourse unit for student support.

For example, course coordinators from Miami-Dade Community College District's Open College work with faculty of four colleges on specific telecourses, and a student services coordinator is responsible for recruitment, counseling, and testing. Facilities at all four campuses are used for registration, testing, student activities, and the like. The Dallas County Community College District includes telecourses as a regular part of the curriculum in each of its seven colleges. The ITV Center oversees and coordinates telecourse offerings on all campuses.

All colleges that offer telecourses typically employ faculty to manage courses and take responsibility for students who are enrolled. In general, each telecourse instructor is provided with print materials, test instruments, and other course materials, which can be supplemented if the faculty or institution so desires. Course materials that are not copyrighted can be modified.

Telecourses can be adapted to particular institutional needs in several ways. As Flanagan indicates:

> The instructor can arrange for class meetings, additional textbooks, additional assignments, a special project, or a term paper. The copyrighted materials in a telecourse cannot be altered but assignments can, and there is nothing to prevent an instructor from adding material or projects (Flanagan, 1980, p. 64).

Because they are flexible, well-designed telecourses present many opportunities for an instructor to make the learning experience more meaningful and help students to achieve their objectives in some interesting and unusual ways. For example, students enrolled in "Oceanus: The Marine Environment," a telecourse in marine science offered through the Southern California Consortium for Community College Television, take "field trips" by boat along the intertidal zones of the California coast (Beaty, 1982). Telecourse instructor Jesse Myers reports that he invites students to visit his office, "share coffee," and discuss ideas stimulated by the course, test performance, or any subject the student wishes to discuss. He also uses seminars "to review certain critical aspects of the study program as presented" (Myers, 1982).

The usual practice of most colleges is to air television programs twice a week so students can review or make up programs they miss. One community college district in particular, the Los Angeles Community College District, goes a step farther. This district provides twenty hours per week of telecourse programming via cable. "These cablecasts are repetitive, permitting students to review the video segment as often as five times" (Members of the Non-Traditional Instruction Committee, 1982, p. 2). The Los Angeles District also provides each telecourse instructor a private telephone line, and the instructor devotes fourteen hours per week to establishing and maintaining telephone communication with students who need it. Students are encouraged to phone instructors with problems or questions (p. 2).

Dr. Philip McGuire managed the offering of "The Shakespeare Plays" for students of Michigan State University in ways that unquestionably expanded

and enhanced his students' learning experience. ("The Shakespeare Plays" telecourse was developed by The Coast Community Colleges and the University of California, San Diego, Extension, around a television series produced by the British Broadcasting Company. Dr. McGuire scheduled weekly discussions with his students, some on campus and some in neighboring towns for those who lived some distance from campus. He supplemented television programs with a personal collection of slides from other productions of the plays. The students whom he described as "out of the mainstream," were also expected to write three essays of four to six pages each, using questions suggested by the course study guide.

A professor in another midwestern university asked his students to come together in an off-campus location to view and discuss broadcast of the last play in the Shakespeare series. The professor and his students wore clothing of the period to the meeting and shared a dinner prepared and served as it might have been served in Shakespeare's sixteenth century England. On hearing of this unusual ending to the course, a telecourse faculty member from another university said, "I wish I'd thought of doing that for my students!"

Dallas ITV Center's use of a humanities course, "In Our Image," is another example of the ways in which instructors make creative use of the components of a telecourse. According to Ted Pohrte (1982), students in this course purchase a study guide-workbook combined and a small book of color productions, Art Prints. They view thirty half-hour television programs, attend an orientation session (which is graded) and at least one on-campus discussion session. They take three proctored examinations during the semester which are composed of numerous objective test items, plus several discussion questions. In addition, students must also attend a symphony or concert, go to see a play or opera, and tour a museum of their choice. Tickets for these events are used to establish their attendance, and students must turn in written reports on their experiences during the concert, play, and museum tour. During the semester, Pohrte explained, students also complete and turn in for grade twenty-two thought-provoking assignments that include defining a human being; taking a "listening walk"; analyzing a motion picture; criticizing works of art; and explaining why objects or events are ugly or beautiful.

Laverne Miller, instructor at Montgomery College in Maryland, summarizes the importance of implementation: "The key to the success of a telecourse is the instructor." Telecourse instructor Betty Moore agrees: faculty who teach television courses need to act as "cheerleaders" to encourage and support their students. "The important thing is to bring the telecourse and the student together" ("Learning by Viewing," 1982).

REFERENCES

Beaty, Sally. In "Learning by Viewing," Fund for the Improvement of Post Secondary Education (FIPSE). Videotape produced by WETA-TV, Washington, D.C., 1982.

Flanagan, John L. "Working with Telecourses--Questions from a Professional Seminar." T.H.E. Journal 7 (November 1980):63-65.

McGuire, Philip. Michigan State University, East Lansing, Mich. Phone conversation, 18 May 1982.

Members of the Non-traditional Instruction Committee of the Los Angeles Community College District. Letter to Deans and Chairpersons, University of California Campuses, California State University and College Campuses, Private California Universities and Colleges. April 28, 1982.

Miller, Laverne. In "Learning by Viewing," Fund for the Improvement of Post Secondary Education (FIPSE). Videotape produced by WETA-TV, Washington, D.C., 1982.

Moore, Betty; and Myers, Jesse. "Learning by Viewing," Fund for the Improvement of Post Secondary Education (FIPSE). Produced by WETA-TV, Washington, D.C., 1982.

Pohrte, Theodore W. Dallas County Community College District, Dallas, Texas. Phone conversation, 18 May 1982.

There is reason to speculate that by the early years of this decade more than half a million students were enrolling in college-level telecourses every year, and at least 800 colleges and universities in the United States and Canada will be engaged in offering televised instruction of some kind. At least a million more nonstudents are viewing telecourses broadcast each week by several hundred public, commercial, and cable stations.

Moreover, telecourses are no longer being delivered exclusively through the screens of television sets located in the comfort of the family room. Itself only a medium, a "highway" for transporting information, television is in turn now being delivered by other media as well as by open-broadcast and closed-circuit channels. Where ordinary broadcast delivery is not possible, well-designed college courses, as well as other forms of instructional television, are being relayed by cable, satellite, telephone, and--in the shape of film, videotape, and videodisc--by such unorthodox carriers as motorized vans, jet aircraft, and possibly dogsled to hundreds of adult learners who probably never could--or would--attend courses offered in campus classrooms.

The rush of institutions and their students to take advantage of instructional television began suddenly toward the end of the 1970s and accelerated rapidly thereafter. Purdy (1980) and Grossman (1982) refer to the "revolutionary" nature of the swift increase and the extent to which television courses are being used in the 1980s. Likely catalysts for this increase were the refinement and sophistication of telecourses and the technological means to deliver them (Munshi, 1980). These events, occurring concurrently, have had strong impact, spawning several other developments of national significance. These include: (1) the establishment of a new public programming service which is exclusively devoted to national delivery of educational programs; 2) the creation by private interests of a $150 million fund to be spent encouraging the development of innovative television and radio courses; (3) the appearance of at least one "national university;" (4) the organization

of numerous large and small consortia representing hundreds of colleges and universities endeavoring to share the costs of producing or offering telecourses; and (5) the emergence of several multi-campus community colleges as acknowledged leaders in the production as well as use of telecourses.

COUNTING COLLEGES AND TELECOURSE STUDENTS

It is difficult to document with accuracy figures about the use of telecourses, except in the case of a few large colleges or universities that keep their own enrollment and distribution records. Because much of the great increase in the number of students taking telecourses and colleges offering them has occurred recently, neither educators nor broadcasters has had appropriate data upon which to base even reasonable expectations about the use of telecourses, much less reliable data. Zigerell (1980) has deplored this lack of "reliable" sources and a "central agency to collect and tabulate data" (p. 1).

The first nationwide study of the use of television by institutions of higher education (the "Higher Education Utilization Study") was conducted for the school year 1978-79 as a joint effort of the Corporation for Public Broadcasting (CPB) and the National Center for Education Statistics (NCES). Dirr, Katz, and Pedone (1980) have analyzed and summarized data collected in the study, which included 2,993 colleges and universities in the United States (p. 1). According to Dirr and Pedone, the study shows that 498,000 students were enrolled in 6,884 television courses offered during the school year 1978-79 through 735 colleges and universities. Public four-year colleges were making the most of those television courses (p. 3).

However, these data did not distinguish between open-broadcast, closed-circuit, or nonbroadcast courses, between off-campus and on-campus courses, or between credit and noncredit courses. In view of these problems with the data, Zigerell suggests accepting the conclusion of Munshi (1980) that "some 200,000 students

enroll nationwide in television courses every year...not including... closed-circuit TV courses on campuses and that 400 to 600 colleges are offering these courses (Zigerell, p. 1).

More recently, research by the Nielsen Company and the Public Broadcasting Service (PBS) disclosed that 50,000 students were enrolled for credit through local colleges of their choice in sixteen telecourses broadcast nationally during the fall and spring semesters of 1981-82 (Grossman, 1982). About 535 colleges and universities and 220 PBS stations located in most of the fifty states participated in offering the sixteen telecourses (Grossman) and ("New Colleges Join Adult Learning Service," 1982). It was also noted that since only a little over half of the schools participating in the program were two-year institutions "clearly, four-year colleges are almost equally interested" ("New Colleges Join Adult Learning Service," p. 2).

In its Education section, Time (1981) described students enrolled in these telecourses as "...full-time workers, housewives, handicapped adults or people who live as far as 400 miles from the college of their choice--who otherwise would not be able to 'go' to college (p. 46). For example, one young working mother enrolled in the American Government telecourse through Eastern Kentucky University for three units of credit. The university is located in Richmond, 125 miles from her home. According to Time, the young woman found the telecourse "exciting," but "I didn't think there would be so much homework or that it would be this hard" (p. 46).

In attempting to estimate the numbers of students currently enrolled in telecourses and the numbers of institutions offering courses, it is necessary to look again at the two studies mentioned earlier. The Higher Education Utilization Study reported that probably 498,000 students were enrolled in television classes offered by 735 colleges during the school year 1978-79. Further, half of the two- and four-year colleges who were not then using instructional television indicated that they had plans to do so "in the future" (Dirr and Pedone, p. 7). The Nielsen-PBS research survey counted 50,000 students enrolled through 535 colleges for credit in sixteen telecourses offered by PBS during the 1981-82 school year. Zigerell estimates

that telecourse enrollments averaged about 25 students per course in 1978-79 (p. 1), while the Nielsen-PBS figures would indicate an average per-course enrollment of 3,125, an enormous increase over the earlier estimates.

It should be noted that the 535 colleges participating in the PBS program represent only a little more than one-fourth of all colleges and universities in the United States; insitutions in Canada that offer telecourses also did not participate. It is obvious, of course, that many other colleges not taking part in the PBS program probably are offering courses through other delivery systems, including nonbroadcast, commercial broadcast, and cablecast. While it is not possible to draw reliable conclusions from this information, one might logically expect the telecourse enrollment to be very much larger than the PBS study might indicate. It can only be inferred, conservatively, that as many as 550,000 students are enrolling in college-level telecourses each school year and that approximately 700 to 800 institutions may be including telecourses in their curricula this year.

PTV-3, THE NEW ADULT LEARNING SERVICE

Such conservative guesses may prove to be far wrong in light of major national developments which are already making more and better telecourses available to those who want them. One of the most significant of these events was the establishment of PTV-3 by PBS as a special programming service designed to meet the formal and informal educational needs of children, young people, and adults. PTV-3 was launched in the fall of 1981 in alliance with The Coast Community Colleges and several other leading producers and users of telecourses. Brock (1980) describes the goals and functions of PTV-3:

> The mission of PTV-3 is ambitious, but achievable: to provide a full range of educational and instructional programs and program-related services for preschool, children's, youth, and adult audiences for at-home and in-school use... though the need for adult learning television programming is clear...there has been no plan for effective coordination and orderly

> development of adult learning via television. It is in this role that the adult learning division of PTV-3 intends to function. The goal will be a national delivery system with local control of credit and content (pp. 44-45).

For its first semester of service, PTV-3 chose nine college-level telecourses; for spring of 1982, seven telecourses were broadcast. Brock (1980) explained the criteria used to select courses:

> National needs must be assessed: existing telecourses must be evaluated, and the most appropriate and excellent courses must be secured for broadcast (p. 45).

Of the nine courses broadcast during the fall of 1981, The Coast Community Colleges and KOCE-TV, owned by the Coast Community College District, either had a leading part or shared in the development or production of five. These courses were: "American Government Survey," "Contemporary Health Issues," "Cosmos," "Humanities through the Arts," and "Understanding Human Behavior."

The remaining fall courses were "The American Story: The Beginning Through 1876," produced by Dallas County Community College District; "Interaction," produced by Maryland Instructional Television; and "It's Everybody's Business," Dallas County Community College District. "Humanities through the Arts" and "Understanding Human Behavior" were part of PTV-3's spring semester offering of seven courses.

THE CPB/ANNENBERG SCHOOL OF COMMUNICATIONS GIFT

The excellence and quality of telecourses will be enhanced, and higher education in general enriched for years to come, by the gift of $150 million given to the Corporation for Public Broadcasting (CPB) through The Annenberg

School of Communications (ASC), the University of Pennsylvania. To be awarded in amounts of $10 million a year for fifteen years, the CPB/ASC funds are meant to provide American colleges and universities "with a significant new resource of educational programming" so that they might be encouraged to "explore and discover new ways to advance American higher education through telecommunications" (Corporation for Public Broadcasting/ The Annenberg School of Communications Project, 1981, p. 1).

The goals of the CPB/ASC Project are: to create one or more significant collections of new, innovative, high-quality college-level materials, including telecourses, and to demonstrate the use of communications systems for addressing unique higher education problems (p. 3).

Among the six first projects funded by the CPB/ASC Annenberg Project are telecourses in introductory physics, proposed by the California Institute of Technology (Cal Tech), Pasadena; English composition and rhetoric and introduction to computers, to be produced by The Coast Community Colleges, the Southern California Consortium for Community College Television, Dallas County Community College, and Miami-Dade Community College ("CPB/Annenberg Selects Six Finalists in Project's First Round," p. 1).

THE EMERGENCE OF THE "NATIONAL UNIVERSITY"

The combination of student' needs and the increasing use of television technology to serve these needs has brought together a coast-to-coast "national university" committed to offering adult students the opportunity to earn B.A. degrees by taking courses based on television programs and reading assignments. A consortium of twenty-two television and cable stations and seventeen colleges and universities, the National University Consortium for Telecommunications in Teaching (NUC) enrolled its first students in the fall of 1980. Telecourses are disseminated by satellite (Hershfield, 1981).

NUC was organized by the Maryland Center for Public Broadcasting and the University of Maryland University College, with help from the Carnegie Corporation of New York. Its members include California State University, Dominguez Hills, The Pennsylvania State University, Texas Technological University, and Wichita State University, among others. NUC students enroll through the college or university of their choice, but receive credits and degrees from their own colleges. The consortium "attempts to provide guided-study courses that are intellectually challenging, current in each discipline, and appropriate for highly motivated and disciplined students who are able to function effectively at the college level. Guided study... uses structured reading and supplementary televison programs. Students learn on their own" (Hershfield, p. 44).

Meanwhile, a second "national university," the American Open University (AOU), was emerging from the regional consortium formerly known as the University of Mid-America (UMA). UMA organized in 1975 with the Universities of Kansas, Missouri, Nebraska, Iowa, Minnesota, and South Dakota and Kansas, Iowa, and South Dakota State Universities as members. UMA offers an average of six telecourses per semester to students and has enrolled 29,298 students during a sixteen-semester period. UMA also produces and distribtues telecourses, having produced or shared in the production of fifteen telecourses.

COMING TOGETHER IN CONSORTIUM

The banding together of colleges and universities--two-year and four-year, public and private--in consortia which are committed to the distribution, use, and sometimes the production of telecourses has been both a cause and an effect of the telecourse "revolution." Beaty explains that members of consortia share costs and available broadcast time, and are thus able to offer their students a greater variety of telecourses, as well as courses that are better in quality. As she notes, the importance of the consortium movement is that "ultimately, the student gets the benefit" ("Learning by Viewing," 1982).

In terms of students enrolled in member colleges, the Southern California Consortium for Community College Television is the largest consortium in the United States. Members include The Coast Community Colleges, the Los Angeles and San Diego Community College systems, and more than thirty other colleges and universities, which are enrolling about 294,000 students annually. The consortium offers fifteen courses during fall, spring and summer terms to an average enrollment of 11,000 students. Since the early 1970s, the consortium has enrolled 310,000 students and produced or coproduced eighteen courses.

In terms of membership, the Eastern Educational Consortium is the largest, claiming forty-five two- and four-year public and private colleges and universities in the states of New York, New Jersey, Pennsylvania, Connecticut, and Delaware.

Maryland Educational Network (MEN) has produced or coproduced eight courses in English, math, philosophy, biology, economics, and others. MEN enrolls about 900 students per semester in five telecourses. Since the fall of 1970, 18,885 students have enrolled in MEN courses. UMA, another consortium active in the production of telecourses, is described earlier.

The University of Alaska Instructional Telecommunications Consortium (AUITC) soon will begin delivering instructional television to students in remote areas far removed from colleges. UAITC will reach every community in the state which has a population of twenty-five or more. The project will involve 140 television stations and fifty colleges. UAITC's programming offers K-12, community access, and adult-oriented courses. Adult programming now includes five telecourses produced or distributed by Coast: "Introducing Biology," "The Growing Years," "Oceanus: The Marine Environment," "Voyage," and "Freehand Sketching."

As with the consortia, the multi-campus colleges, especially the community colleges, have emerged as leaders in offering and producing telecourses both as cause and product of the proliferating use of telecommunications at the higher education level. These leaders include the City Colleges of Chicago, The Coast Community Colleges, Dallas County Community College District, and the Miami-Dade Community College District. Since 1951, Chicago City TV College, one of the earliest postsecondary schools to do so, has offered instructional television to more than 200,000 students.

The Coast Community Colleges has offered telecourses to nearly 62,000 students since the fall of 1975. Through Coastline Community College, students can now earn A.A. degrees by telecourse. Degree and nondegree students of the district and other colleges enroll through Coastline and receive credit through Coastline. Twenty-seven courses, including transfer courses as well as those leading to an A.A. degree, were being offered by Coastline during the sprihg semester, 1982; another twelve are offered during summer term. Probably the largest producer of college-level telecourses in the country, The Coast Community Colleges has produced or coproduced twenty-four telecourses in diverse disciplines.

Dallas Community College District, another leading producer, has produced or coproduced twelve telecourses and has enrolled 70,000 students in telecourses over the last decade. Telecourse offerings average ten a semester, and student enrollment in a normal semester is 4,500. Miami-Dade offers seven telecourses per semester with an average of 1,400 students enrolled, and has enrolled 35,000 students in these courses during the past few years.

SOME CONCLUSIONS

This article is by no means an attempt to identify and describe all the uses of telecourses or all of the colleges and universities that produce them. As noted earlier, it can be said with certainty only that the use of instructional television is vast and still growing. As Dr. Bill Stewart, president of Kirkland Community College, Cedar Rapids, Iowa, has said, this growth will be by "leaps and bounds."

Well-designed telecourses are being delivered to many thousands of students in ordinary circumstances and ordinary communities in all fifty states; to men and women in prisons; to patients in hospitals; to men and women of the American military services; to farm families; and to the handicapped. Instructional television in various forms is teaching doctors, nurses, paramedical personnel, and workers on jobsites. A jet aircraft, converted to a surgery and flying television studio, travels the world taping clinical procedures and making the tapes available to doctors and hospitals ("Reaching People Where They Are," 1982, p.4). The Mississippi State Education Department uses a mobile van to produce tapes and slides and transport them to jobsites, where unskilled workers can be prepared for new jobs (p. 4). Telephone lines carry televised "courses" to doctors in twenty-seven remote communities of the sparsely settled Sioux Lookout Zone of Northern Ontario, linking these doctors to hospitals and other medical personnel ("Telemedicine Project Brings Continuing Education to Rural Doctors," 1980, p. 35).

Some of UAITC's students in Alaska live in outlying communities 500 miles or more from any of the colleges or universities in the consortium. Many of these settlements have no roads, and transportation for people and materials is by plane only, which is expensive. While UAITC has not yet had to do so, a consortium spokesman says it is conceivable that weather and distance might sometime make it necessary to deliver videotapes and other course materials--even students--by dogsled.

Still, for some, these remarkable advances in the uses of television technology are not enough. Conceding that the extensive use of television in higher education has already reached "revolutionary" proportions, Grossman (1982) declares, nonetheless,

> ...the fact remains that colleges and universities have not yet taken the major role in this learning revolution, for only 30 percent of all adult learning--credit and noncredit--is associated with postsecondary institutions...We must seize the opportunity to use technologies to expand the best that civilization has to offer...The synthesis of television, satellite, computer and cable does offer extraordinary opportunities for education. It brings unprecedented resources to every campus, reaching throughout the nation and throughout the world to make available the greatest teachers, reference material, data and unlimited information with the push of a button... (pp. 4,12).

REFERENCES

Brock, Dee. "Adult Learning Through Televison: The Forging of a New Partnership." T.H.E. Journal, 7, no. 6 (November 1980):44-45.

Corporation for Public Broadcasting/The Annenberg School of Communications Project. Funding Announcement. 1981, pp. 1-8.

"CPB/Annenberg Selects Six Finalist in Project's First Round." CPB Report, Vol. 13, No. 4, February 15, 1982, pp. 1,3.

Dirr, Peter J.; Katz, Joan H.; Pedone, Ronald J. Higher Education Utilization Study. Phase I: Final Report. Washington, D.C.: Corporation for Public Broadcasting, 1981.

Grossman, Lawrence K. "Coming Together--Public Television and Higher Education." Speech before the National Telecourse Conference 1982: "Managing Technology for Adult Learners." Dallas: April 30, 1982, pp. 1-13.

Hershfield, Allan. "The National University Consortium--One Year Later." Change 13(1981):43-45.

Munshi, Kiki Skagen. Telecourses: Reflections '80. Washington, D.C.: Corporation for Public Broadcasting, 1980.

"New Colleges Join Adult Learning Services." Telescan 1, Issue 4 (March/April 1982).

"PBS and College Education." Time, 5 October 1981, p. 46.

Purdy, Leslie N. "The History of Television and Radio in Continuing Education." New Directions for Continuing Education: Providing Continuing Education by Media and Technology. No. 5 San Francisco: Jossey-Bass, 1980.

"Reaching People Where They Are." Instructional Innovator, 27 (May 1-7, 1982):4.

"Telemedicine Project Brings Continuing Education to Rural Doctors." T.H.E. Journal 7, no. 6 (November, 1980):35-36.

Zigerell, James J. "Current Developments in Telecommunications in Two-Year Postsecondary Institutions in the United States." Television in Community and Junior Colleges: An Overview and Guidelines. Los Angeles: ERIC Clearinghouse for Junior Colleges, University of California; and Syracuse; ERIC Clearinghouse on Information Resources, Syracuse University, 1980.

Impressive as is this sourcebook record and its conclusions about telecourses, it is not the whole story. While the sourcebook has described telecourses and telecourse students in general, it is important to realize that educational television is neither a static nor uniform phenomenon. Telecourses have been produced and offered in almost all curricula: vocational, community service ("how to" courses), general education transfer courses, upper-division courses, continuing education, and graduate credit courses. While The Coast Community Colleges has focused primarily on the production of general education and community service courses, other educational and commercial institutions have found that television courses can provide continuing education courses for nurses, teachers, skilled laborers, and doctors. The military services use television in educational materials for technical training and for degrees as well; business and industry leaders are discovering the advantages of telecourses for training employees.

Both the concept of the telecourse and the use of telecourses are still changing and evolving, and it would be incorrect to suggest that all the problems of this form of education have been solved. It is not the intention of this sourcebook to suggest that a panacea has been found for every problem. For example, telecourses have been criticized for being too impersonal and that they lack an opportunity for personal interaction and relationship between instructors and students. In this, telecourses and oncampus undergraduate education today share a similar problem: there is little opportunity for faculty-student interaction to develop. When this kind of relationship is important to learning for even a few students, then institutions that design and offer telecourses must consider ways to provide for this interaction. Telecourses have succeeded in reaching large numbers of students, but that does not preclude the opportunity for faculty to communicate and work with individual students by any means and in any manner appropriate to the student's needs.

There is also still room for improvement in the quality of telecourses, especially those that will be offered through many institutions to large numbers of students. Particularly since the mid-1970s, immense improvement has been made in telecourses through application of sound principles of academic design and the participation of professionals in the fields of television, writing, editing, and publishing. Establishment of the $150 million CPB/ASC (Annenberg fund) will further stimulate the production of superior courseware during the next few years; and the growing number of consortia, task forces, and official commissions will help to encourage and expand both use and production of telecourses. But the need for supplementary funding is becoming critical to those who produce good telecourses.

It is clear from this sourcebook that the use of telecommunications in higher education is extensive indeed, but there is growing complaint from some quarters that telecommunications is still not being used to full capacity and should be used even more extensively. The California Post Secondary Education Commission has called upon colleges and universities to make greater use of telecourses to solve five major social and educational problems that plague Californians. The technology to do so is already in place.

Others note that the demand for educational opportunities has been ballooning for several years--especially among the older, more mature, working population--but that colleges are not yet taking major responsibility for meeting the demand.

The establishment and acceptance of the validity and effectiveness of telecourses, together with the production of more and better telecourses, will certainly increase student demand for them and will interest more institutions in offering them. The ability of educational institutions to reach more students, wide though it already is, will be multiplied almost beyond imagination by the proliferation of cable television; the use of satellites and other relay technologies; the establishment of PTV-3, a broadcast service for adult learners; the growth in regional and national consortia; and the marriage of computers to television.

The end point of what can be done when television is combined with other media for educational purposes has not yet been reached; rather, this is probably just the beginning of a revolution in education which will involve many forms of telecommunications. Will America's existing colleges and universities have the financial resources and physical facilities to accommodate these growing numbers of students?

ACSN. Appalachian Community Service Network, an educational and informational cable television programming service available over SATCOM III-R.

ADOPTION. The process used by a college when adding a course to the curriculum. A course generally requires administrative, faculty and curriculum council approval.

AOU. American Open University, a national off-campus degree program and successor to the University of Mid-America.

AV (AUDIOVISUAL). Any of a number of audio, video, or film-based activities used in education.

BICYCLING. Transmission or circulation of videotapes or cassettes among various institutions, stations, or cable head-end facilities.

CAI. Computer-Assisted Instruction, whereby a student interacts with a computer, and the computer responds as a teacher (with an unlimited amount of patience). The PLATO system is an example of CAI.

C A.T.V. (COMMUNITY ANTENNA TELEVISION). A system comprised of a centralized antenna connected to individual residences by means of cables. A C.A.T.V. service usually provides local and national broadcast stations and may provide special movies, community information and data services for additional fees.

CEN. Central Educational Network, a regional educational television network serving general public television, K-12 instructional and postsecondary telecommunications within 35 public television stations and numerous schools and institutions in 12 states.

CPB. Corporation for Public Broadcasting, a non-profit corporation which administers policies and programs to foster development of non-commercial radio and television service.

CPB/ASC PROJECT. A $150 million fund established by Walter Annenberg to be distributed by the Corporation for Public Broadcasting over a 15-year period. The purpose of the fund is to promote innovative educational uses of technology.

CPEC (CALIFORNIA POSTSECONDARY EDUCATION COMMISSION). A governance agency that deals with issues focused on postsecondary education.

CRT. Cathode ray tube, or better known as the everyday television or television screen type of display.

CAPTIONING. An electronic process using a character generator or sign language to provide the audio portion of a television program for the deaf.

CLOSED-CIRCUIT. A video transmission that is not for broadcast to the public.

COAXIAL CABLE. A high frequency cable used for transmission of cable television signals.

CONSORTIUM. A group of institutions cooperating in the coordination, scheduling, delivery, cost-sharing, and perhaps production of media courses.

COURSE TEAM. The group of people responsible for producing all components of a telecourse to meet instructional design, academic, and technical quality standards. Team commonly includes the instructional designer, video producer, academic advisor, and editor of publications.

CURRICULUM COUNCIL. A group of individuals representing faculty, administration, and, frequently, students, who are charged with the responsibility of reviewing and approving or disapproving the academic program, course by course, within a given institution.

DBS. Direct Broadcast Satellites for feeding satellite-to-home transmissions.

DELIVERY. The set of support activities associated with offering college-level television or radio courses.

DISH. A ground-based satellite receiving or transmitting antenna sometimes referred to as a downlink or uplink.

DISK (DISC). A. (computer) A circular piece of material which has a magnetic protective coating similar to that found on an ordinary recording tape which stores information. Floppy disks are made from flexible materials; hard disks are made from rigid materials. B. (video) An L.P. record-shaped device used to store and playback video programs.

DISKETTE. A small, floppy disk, either about 13 or 20 centimeters on a side.

DOWNLINK. A ground-based receiving station used to receive programming from a satellite.

DUBBING. The duplication of a video program from a master onto other formats of videotapes.

EEC. Eastern Educational Consortium, an organization of 48 two-year and four-year public and private colleges in New York, New Jersey, Pennsylvania, Connecticut, and Delaware who are interested in extended learning through technology.

FACULTY ADVISOR(S). These individuals are responsible for the content of any given course. They are an integral part of the design team, and are generally full-time teaching faculty or professionals working in the field.

FEED. Transmission of video program via open-circuit or satellite delivery.

FILM-TO-TAPE TRANSFER. An electronic process for transmitting the audio track and image track on a film to a videotape for rebroadcast or duplication.

FIPSE. Fund for the Improvement of Post Secondary Education, a federal agency devoted to the encouragement of innovation in higher education. One of its purposes is to establish institutions and programs based on the technology of communications.

FORMAT. A description of the general sizes and availabilities of videotape, such as 1/2" Beta, 1/2" VHS, and 3/4" U-matic videocassettes and 1" and 2" tape.

HARDWARE. The video and audio equipment used in the transmission of programming, including television sets, radios, recorders, transmission facilities, and uplinks; the physical parts of a computer system.

HEAD-END. The origination point for local cable television programming, consisting of a receiving dish, local antennas, and transmission equipment.

IMPLEMENTATION. The instructional activities involved with the delivery of telecourses, ranging from promotion and schedule coordination to registration and faculty involvement.

INDEPENDENT STUDY COURSE. A term used by the state of California to identify courses, such as television and radio, to deliver a body of knowledge through a nonclassroom medium to students who frequently do not meet in regularly scheduled classroom settings.

INSTRUCTIONAL DESIGN. The process of preparing a college-level instructional television course, integrating broadcast, text, study guide, and other components, according to an outline of course objectives.

INSTRUCTOR OF RECORD. Whether a classroom or telecourse, the instructor who is responsible for the delivery of a course and for assigning grades to students who enroll in that course.

INTERACTIVE. Said of a computer system which responds to the user quickly.

ITC. Instructional Telecommunications Consortium, an arm of the American Association of Community and Junior Colleges (AACJC), which serves as a forum for the exchange of information about instructional telecommunications and for the planning of television and radio course materials. At one time ITC was the Mass Media Task Force for AACJC.

ITFS. Instructional Television Fixed Service, a restricted open-circuit or specialized closed-circuit broadcasting service with line-of-site transmission and a limited range using 2500 MHz.

LEARNING MANAGER. A term used to identify a faculty member who is the credentialed instructor of record responsible for the students enrolled in an independent study course.

MDS. Multipoint Distribution Service, one origination point distributed via microwave, satellite, or telephone lines to several receiving points (point to multipoint).

MICROS. (Microcomputers) A new generation of computers with limited capability for memory and based upon microprocessor technology.

MICROWAVE TRANSMISSION. A ground-based method of feeding programming within a local, geographical area to several stations.

MONITOR. Cathode ray tube, often which is specially manufactured to be connected to a computer or video player.

NPR. National Public Radio, a membership organization of the nation's public radio stations. Part of the Corporation for Public Broadcasting (CPB).

OFF-AIR RECORDING. Videotaping by an individual or institution of a program fed via open-circuit or cablecast.

OFF-AIR TAPING LICENSING. An agreement by which an institution acquires rights to tape off-air and to hold the tape for a specified period of time.

ON-CAMERA TALENT. The individual host or instructor who appears on the television screen. The individual may be a faculty member or an actor reading a script prepared by the design team.

OPEN-CIRCUIT. A video transmission that is intended to be received by the general public via open broadcast.

PBS. Public Broadcasting Service, a membership organization of the nation's public television stations. Part of CPB.

PLATO. An immensely powerful hardware-software computer system of Control Data Corporation.

PMN. Pacific Mountain Network, a regional membership organization formed by public television stations in the West to develop and administer products and services that benefit its members.

PREVIEW PACKAGE. This booklet includes course goals, learning objectives, lesson descriptions, a course outline, and general information about the course to aid institutions considering adoption of the course.

PSEC. Post Secondary Education Council, the council of the Central Educational Network which consists of two-year and four-year public and private colleges and universities and vocational/ technical schools in ten states.

PSSC. Public Service Satellite Consortium, an organization of members in the fields of education, public broadcasting, health, medicine, state telecommunications, and religious communications to assist in delivering services more efficiently through the use of new communications technology.

PTV-3. The education program service division of PBS including children's and youth, K-12, and the adult learning departments.

QUAD. A reel of 2-inch wide videotape used in broadcasting programs for open-circuit and satellite feeds.

QUBE. A cable system owned by Warner-Amex Corporation with specialized paid-per-view programming and which provides for two way communication.

SATCOM I. The primary satellite distributing video programming through cable head-ends, also called Cable Net I.

SATCOM III. The RCA satellite that vanished into space, which was replaced by SATCOM III-R in November, 1981.

SATELLITE. Man-made device which is launched from the earth and orbits around the earth to receive and transmit programming and data.

SCRAMBLED. Signals which have been modified to prevent the copying of a prerecorded, copyrighted videotape without the use of a descrambling device.

SECA. Southern Educational Communications Association, a regional public broadcasting network serving both public television and public radio and providing member stations with programming, representation, and professional development services.

SECA CENTER. The unit within SECA which is responsible for providing programming and professional services to its members in elementary, secondary, and post secondary education.

SELF-PACED STUDY. A method of learning by which a student completes a television course without regard to a fixed schedule, usually by closed-circuit viewing at the individual's own rate of speed.

SOFTWARE. The video productions or transmissions fed via video or audio hardware; programs and data for a computer.

STUDY GUIDE. A book that coordinates the video and print components of a telecourse. It includes overviews of lessons, self-evaluation techniques, additional activities, extra-credit assignments, and other pertinent information.

TELECONFERENCE. A closed-video feed via satellite during which the viewing participants have the ability to communicate with participants at the original point of transmission via audio and sometimes video link.

TELECOURSE. A learning system comprised of video programs, textbook and study guide materials, test instruments, learning exercises, student-faculty interaction, seminars, and other strategies.

THE NEW STUDENT. A term used to refer to a student who is particularly interested in independent study courses because of their quality, convenience, and accessibility.

THE TELECOURSE PEOPLE. A consortium of leading telecourse-producing institutions including Coast Telecourses, Dallas County Community College District, Maryland Center for Public Broadcasting, Miami-Dade Community College, Southern California Consortium for Community College Television, and University of Mid-America.

TRANSPONDER. The receiver-transmitter portion of a communications satellite which receives a signal from the ground, amplifies it, and transmits it back to earth.

UPLINK. A ground-based transmission station used to feed programming to a satellite.

VIDEOCASSETTE. A self-contained unit of magnetic videotape typically in 3/4", 1/2", and 1/4" formats containing one or more programs.

VIDEODISC. Magnetic disc for the storage of video and audio information.

WESTAR. A satellite used by a PBS station for transmission of video and data programming.

BIBLIOGRAPHY

Asheim, L., et al. Educational Television. The Next Ten Years. U.S. Educational Resources Information Center, ERIC Document ED 012 887, 1965.

Aversa, Frances M., and Forman, David C. Issues in the Evauation of Educational Television Programs. Lincoln, Nebr.: University of Mid-America, 1976.

Baba, Marietta Lynn; Schermer, Joy; and Shifrin, Norma. "Designing, Producing, and Evaluating an Instructional Telecourse: A Model for Involving the Adult Learner." Journal of Instructional Development 3 (1980):24-32.

Beaty, Sally. In "Learning by Viewing." Fund for the Improvement of Post Secondary Education (FIPSE). Videotape produced by WETA-TV, Washington, D.C., 1982.

Brock, Dee. "Adult Learning through Television: The Forging of a New Partner." T.H.E. Journal 7, no. 6 (November 1980):44-45.

Brock, Dee. "PTV-3 Update." Address before the National Telecourse Conference 1982: "Managing Technology for Adult Learners," Dallas, Texas. April 30, 1982.

Brown, Laurence A. Learner Responses to the Use of Television in UMA Courses: Working Paper No. 8. Lincoln, Nebr.: University of Mid-America, July 1975.

Bruffee, Kenneth A. "CLTV: Collaborative Learning Television." Educational Communications and Technology Journal 30 (1982):26-40.

Byerly, J. "Investigation of Factors That Condition Student Enrollment in Broadcast Courses at Coastline Community College." Dissertation, Pepperdine University, 1982.

Carlisle, Robert D. B. College Credit through TV: Old Idea, New Dimensions. Lincoln, Nebr.: Great Plains National Instructional Television Library, 1974.

Carlisle, Robert D. B. Media & the Adult Student: One Man's Journal. Lincoln, Nebr.: Great Plains National Instructional Television Library, 1976.

Carnegie Commission. Public Trust, The Report of the Carnegie Commission on Public Broadcasting. New York: Bantam Books, 1979.

Cavert, Edward. In "Learning by Viewing." Fund for the Improvement of Post Secondary Education (FIPSE). Videotape produced by WETA-TV, Washington, D.C., 1982.

Center for Learning and Telecommunications. "West Virginians Earn College Credit through Statewide Telecourses." Telescan 1 (March/April 1982):11-12.

Chu, Godwin C., and Schramm, Wilbur. Learning from Television: What the Research Says. Stanford, Calif.: Stanford University, Institute for Communications Research, 1967.

Clark, Richard E. Review of Media in Instruction: 60 Years of Research, by Gene L. Wilkinson, in Educational Communications and Technology Journal 30 (1982):60.

Clement, Nancy. "A Comparison of Telecourse Students in Fall, 1976 and Fall, 1980." Mimeographed. Fountain Valley, Calif: Coastline Community College, August 20, 1981.

Corporation for Public Broadcasting/The Annenberg School of Communications Project. Funding Announcement. 1981, pp. 1-8.

"CPB/Annenberg Selects Six Finalists in Project's First Round." CPB Report. Vol. 13, no. 4, February 15, 1982, pp. 1,3.

Crow, Mary Lynn. Teaching on Television. Arlington, Tex.: The University of Texas at Arlington, 1977.

Dirr, Peter J.; Katz, Joan H.; Pedone, Ronald J. Higher Education Utilization Study. Phase I: Final Report. Washington, D.C. Corporation for Public Broadcasting, 1981.

Dissertation Abstracts International, 1980, 41 (6), 2342A. University Microfilm's Number 8026374.

Dubin, R., and Traveggia, T. C. The Teaching Learning A Paradox: A Comparative Analysis of College Teaching Methods. Eugene, Oreg.: University of Oregon, Center for the Advanced Studies of Educational Administration, 1968.

DuBois, Jacques. In "Learning by Viewing." Fund for the Improvement of Post Secondary Education (FIPSE). Videotape produced by WETA-TV, Washington, D.C., 1982.

Erickson, C. G., and Chausow, H. M. Chicago's TV College: Final Report of a Three Year Experiment. Chicago: The Chicago City Colleges, June, 1960.

Evans, Richard I., and Leppman, Peter. Resistance in Higher Education: A Social Psychological Exploration Focused on Television and the Establishment. San Francisco: Jossey-Bass, 1970.

Faure, Edgar. Learning to Be. Paris: UNESCO International Commission on the Development of Education, 1972.

Field, Hyman H. "Role of the Faculty in Mass Media Courses." In Using Mass Media for Learning, edited by Roger Yarrington, pp. 63-68. Washington, D.C.: American Association of Community and Junior Colleges, 1979.

First Annual National Conference on Open Learning. Conference Proceedings. Lincoln, Nebr.: n.p., 1974.

Flanagan, John L. "Working with Telecourses--Questions from a Professional Seminar." T.H.E. Journal 7 (November 1980):63-65.

Gould, Samuel B. Diversity by Design. San Francisco: Jossey-Bass, 1973.

Gross, L. S. A Study of Two College Credit Courses Offered over Television by the Southern California Consortium for Community College Television. U.S., ERIC Document ED 011 003, 1972.

Grossman, Laurence K. "Coming Together--Public Television and Higher Education." Speech before the National Telecourse Conference 1982: "Managing Technology for Adult Learners." Dallas, Texas, April 30, 1982, pp. 1-13.

Harris, Chip, Director of Marketing and Distribution. Memorandum to Norman E. Watson, Chancellor, Coast Community College District, Costa Mesa, California, 20 April 1982.

Hershfield, Allan. "The National University Consortium--One Year Later." Change 13 (1981):43-45.

Hewitt, Louise M. "Publications." A Decade of Telecourses, Office of Community Relations, Coast Community College District, Costa Mesa, Calif. (1980), pp. 18-20.

Hewitt, Louise M. An Administrator's Guide to Telecourses. Costa Mesa, Calif.: Coast Community College District, 1980.

Holmberg, Börje. Status and Trends of Distance Education. New York: Nichols Publishing Co., 1981.

ITV Center. ITV Close-up: The First Six Years. Dallas: Dallas County Community College District, 1978.

ITV Center. Tele:Visions. Vol. 2, no. 1. Dallas County Community College District, March/April 1980.

Jankowski, Gene F. "Books and Television: A Complementary Relationship." USA Today, May 1981, pp. 62-64.

Lattanzio, Stephen P. Costa Mesa, California. Personal letters and evaluation data, 1979, 1980.

"Learning by Viewing." Fund for the Improvement of Post Secondary Education (FIPSE). Videotape produced by WETA-TV, Washington, D.C., 1982.

"Linking Californians for Learning." California Postsecondary Education Commission (CPEC) Report 81-28, Sacramento, Calif.: November, 1981.

McBride, J. "A Working Model for Instructional Television." Educational Technology, May 1976, pp. 30-34.

McGuire, Phillip. Michigan State University, East Lansing, Michigan. Telephone conversation, 18 May 1982.

Members of the Non-Traditional Instruction Committee of the Los Angeles Community College District. Letter to Deans and Chairpersons, University of California Campuses, California State University and College Campuses, Private California Universities and Colleges, 28 April 1982.

Miller, Laverne. In "Learning by Viewing." Fund for the Improvement of Post Secondary Education (FIPSE). Videotape produced by WETA-TV, Washington, D.C., 1982.

Mittelstet, Stephen K. "Telecourse Design, Development, and Evaluation." In Using Mass Media for Learning, edited by Roger Yarrington, pp. 53-61. Washington, D.C.: American Association of Community and Junior Colleges, 1979.

Moore, Betty. In "Learning by Viewing." Fund for the Improvement of Post Secondary Education (FIPSE). Videotape produced by WETA-TV, Washington, D.C., 1982.

Mount, George R., and Walters, Sharon B. "Traditional versus Televised Instructional Methods for Introductory Psychology." Journal of Educational Technology Systems 9, no. 1 (1980-1981).

Myers, Jesse. In "Learning by Viewing." Fund for the Improvement of Post Secondary Education (FIPSE). Videotape produced by WETA-TV, Washington, D.C., 1982.

Munshi, Kiki S. Telecourses: Reflections '80. Washington, D.C.: The Corporation for Public Broadcasting, 1980.

"New Colleges Join Adult Learning Services." Telescan 1, Issue 4 (March/April 1982).

Office of College Development. Coordinated Instruction System Student Survey: Coastline Community College. Costa Mesa, Calif.: The Coast Community Colleges, 1981.

Office of College Development. Designing Home Interiors: A Preview. Costa Mesa, Calif.: Coast Community College District, 1978.

Office of College Development. The Growing Years: A Preview. Costa Mesa, Calif.: Coast Community College District, 1982.

Office of Educational Planning and Development. "An Examination of Principles, Criteria, and the Law as Related to the Offering of Telecourses for Credit by California Community Colleges." Position paper, December 1975. Costa Mesa, California, Coast Community College District.

Office of Instruction, Coastline Community College. Costa Mesa, Calif.: The Coast Community Colleges, 1981, 1982.

Office of Resource Development, Research Department. Evaluation of Psychology 201 Telecourse. Dallas: Dallas County Community College District, 1978.

Office of Special Services. Evaluation of the Psychology 105 Telecourse "As Man Behaves." Dallas: Dallas County Community College District, 1976.

Office of Special Services. Evaluation of the Psychology 105 Telecourse "As Man Behaves." Dallas: Dallas County Community College District, 1977.

Office of Special Services. History 101 Telecourse Evaluation "The American Story, Beginnings to 1877." Dallas: Dallas County Community College District, 1977.

Office of Special Services. Summary of the Evaluation of English 101 Telecourse "Writing for a Reason." Dallas: Dallas County Community College District, 1976.

Oshins, Joseph H. "'Snap, Crackle, and Pop': Learning from Television." Change, October 1981, pp. 8-10.

O'Rourke, J. S., IV. "The Introduction of Videotaped Instructional Material into the Curriculum of the United States Air Force Air Command and Staff College Associate Seminar Program: A Comparison of Education Strategies." Doctoral dissertation, Syracuse University, 1980.

"Outreach Target: Kalaupapa." Community Colleges, February 1982, p. 8.

"PBS and College Education." Time, 5 October 1981, p. 46.

Perry, Walter. The Open University. San Francisco: Jossey-Bass, 1977.

Pohrte, Theodore W. Dallas County Community College District, Dallas, Texas. Telephone conversation, 18 May 1982.

Pohrte, Theodore W. "Planning and Design Process." Television in Community and Junior Colleges: An Overview and Guidelines. Los Angeles: ERIC Clearinghouse for Junior Colleges, University of California; and Syracuse: ERIC Clearinghouse on Information Resources, Syracuse University, 1980.

Postelthwait, S. N.; Novak, J.; and Murray, H. An Integrated Experience Approach to Learning. Minneapolis, Minn.: Burgess Publishing, 1964.

"Present and Projected use of Broadcast, Satellite, and Cable Television in California Community Colleges." A preliminary report to the Legislature. January, 1982.

Purdy, Leslie. "Design--And How It Works." A Decade of Telecourses, Office of Community Relations, Coast Community College District, Costa Mesa, Calif. (1980), pp. 15-17.

Purdy, Leslie. "The History of Television and Radio in Continuing Education." New Directions for Continuing Education: Providing Continuing Education by Media and Technology. No. 5. San Francisco: Jossey-Bass, 1980.

Purdy, Leslie, and Icenogle, Darrell. Classic Theatre--The Humanities in Drama: A Television Course for Credit: Final Research Project. National Endowment for the Humanities, 1976.

"Reaching People Where They Are." Instructional Innovator 27 (May 1-7, 1982):4.

Records of Coast Telecourses. Costa Mesa, Calif.: Coast Community College District, 1982.

Reid, J. C., and MacLennan, D. W. Survey of Research in Instructional Television and Film. Washington, D.C.: U.S. Government Printing Office, 1967.

Research and Evaluation Department. McGraw-Hill Book Company. "The McGraw-Hill Growing Years Telecourse." Research Report, no. 5 (August 1979).

Rhines, Christopher. "The Maryland College of the Air: A Focused Analysis." Baltimore, Md.: Essex Community College, 1977.

Riddick, Glenda. "Cognitive Mapping of Telecourse Students." Coastline Community College, Spring 1979.

Ritchey, E. A. "Change in Attitude to Help Behaviors through Teaching with Television." Journal of Educational Technology Systems 9, no. 2 (1981).

Salomon, Gavriel. Interaction of Media, Cognition, and Learning: An Exploration of How Symbolic Forms Cultivate Mental Skills & Affect Knowledge Acquisition. San Francisco: Jossey-Bass, 1979.

Smith, R. B. "The Effects of Computer Assisted Feedback on Student Performance in a Televised College Course." Dissertation, United States International University, San Diego, 1975.

Southern California Consortium for Community College Television. "A Second Decade." Cypress, Calif.: n.d., pp. 1-15.

Stickell, D. D. "A Critical Review of the Methodology and Results of Research Comparing Televised and Face-to-Face Instruction." Doctoral Dissertation, The Pennsylvania State University, 1963.

"Telemedicine Project Brings Continuing Education to Rural Doctors." T.H.E. Journal 7, no. 6 (November 1980):35-36.

"The Growing Years." Telecourse, produced by The Coast Community Colleges, the University of California at San Diego, and McGraw-Hill, 1977, revised 1982.

Vander Haeghen, Peter. "Television and Colleges: Some Projects Work Well Together." Letter to the editor of The Chronicle of Higher Education 21, no. 8, 14 October 1980.

Viviano, Frank. "Using Television to Teach Writing." Change, March, 1979, pp. 8-9.

Waniewicz, Ignacy. Broadcasting for Adult Education. Paris: UNESCO, 1972.

Watson, Norman E. "Putting Some Generalities to Rest." Forum Fifty, 2 June 1980, p. 2.

Wildman, Terry M., and Burton, John K. "Integrated Learning Theory with Instructional Design." Journal of Instructional Development 4 (1981):5-14.

Wilkinson, Gene L. Media in Instruction: 60 Years of Research. Washington, D.C.: Association for Educational Communications and Technology, 1980.

Willey, George A., Director, Bay Area Community College Television Consortium. Letter to Mary Lou Zoglin, Associate Dean, Alternative Learning Systems, Coastline Community College, Fountain Valley, California, 14 May 1982.

Wood, Donald N., and Wylie, Donald C. Educational Telecommunications. Belmont, Calif.: Wadsworth Publishing Company, 1977.

Wyman, Robert, Dean of Instruction and President, Television Consortium of Valley Colleges, Sacramento, California. Letter to Whom It May Concern, 12 May 1982.

Zigerell, James J. "A Brief Historical Survey." In Using Mass Media for Learning. American Association of Community and Junior Colleges: Washington, D.C., 1979, pp. 1-12.

Zigerell, James J. "Current Developments in Telecommunications in Two-Year Postsecondary Institutions in the United States." Television in Community and Junior Colleges: An Overview and Guidelines. Los Angeles: ERIC Clearinghouse for Junior Colleges, University of California; and Syracuse: ERIC Clearinghouse on Information Resources, Syracuse University, 1980.

Zigerell, James J.; O'Rourke, James S.; and Pohrte, Theodore W. Television in Community and Junior Colleges: An Overview and Guidelines. Los Angeles: ERIC Clearinghouse for Junior Colleges, University of California; and Syracuse: ERIC Clearinghouse on Information Resources, Syracuse University, 1980.

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